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ABSTRACT

Written for use by vocational-technical teachers as a reference, workshop resource, or resource for an individualized self-paced inservice package, this text is designed to provide knowledge and techniques necessary to develop or adapt modules for individualized instruction. Part 1 presents the basics of individualized instruction in three chapters: Individualized Instruction in Perspective, Individualized Instruction as Applied to Vocational-Technical Education, and Degree of Individualization. The five chapters in part 2 contain the principles for planning, developing, and adapting modules. Chapter 4, Planning for Individualized Modules, includes an assessment of the basic curriculum requirements, feasibility considerations, and specific suggestions for sequencing, selecting learning resources, and planning learning experiences. Preparation of the student and teacher guides for individualized learning activities is explained in chapters 5 and 6, Developing the Student Guides and Developing Teacher Guides. The components of the guides are outlined, and sample guides are provided. Chapter 7, Guide for Developing Modules, presents a step-by-step process, including planning instructional requirements and strategies and preparing learning activity and teaching guides. Chapter 8, Evaluating Modules for Possible Use or Adaptation, contains evaluation guides organized into two sections: evaluation of the total package and evaluation of the instructional materials. (YLB)

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DEVELOPING INDIVIDUALIZED MODULES FOR VOCATIONAL–TECHNICAL EDUCATION

State of Alabama
Department of Education
Division of Instructional Services
Montgomery, Alabama 36130

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June, 1979

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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FOREWORD

Students in vocational-technical education differ in several ways. They differ in the ways they learn. Different reasons bring them into the programs. Background experiences differ with each student. Not all of them have the same capabilities for learning. They differ in many other ways.

One of the challenges confronting the teacher is how to meet the needs of those different students--how to make the teaching-learning activities responsive to the needs and differences of each student and still provide effective, efficient instruction. Conventional methods of instruction have not always met that challenge because they were designed for the "average" student and emphasized likenesses instead of differences. But the challenge can be met by applying the techniques of individualized instruction which can accommodate both the likenesses AND the differences.

Individualized instruction is not entirely new. In fact, some of its techniques have been used for centuries. For example, some teachers have always provided individual assistance as time permitted, made assignments according to student capabilities, advanced some students who were capable of doing so and offered self-paced instruction to certain students. But as a system it is relatively new.

One of the most effective ways in which individualized instruction can be systematically designed and implemented is through modules. When designed for vocational-technical education, modules provide the learning experiences necessary for the achievement of job-related objectives. They differ from conventional lessons in that they are self-instructional, largely self-directing and are adaptable to students needs and differences.

This text--written for the vocational-technical teacher--was designed to provide the knowledges and techniques necessary to develop or adapt modules for individualized instruction. Part One, devoted to the basic theory, presents the rationale for individualized instruction in vocational-technical education and explains the common degrees of individualization. Part Two deals with the how-to-do-it procedures for planning, developing, and adapting modules. The text can be used as a reference, as a workshop resource, or as a resource for an individualized, self-paced inservice package.

TABLE OF CONTENTS

PART ONE--BASIC THEORY OF INDIVIDUALIZED INSTRUCTION 1

Chapter

1. INDIVIDUALIZED INSTRUCTION IN PERSPECTIVE 3
   - Increasing Concern for Worth of the Individual 3
   - Increasing Awareness of Individual Differences 4
   - The Explosion of Educational Media 4
   - Changing Perception of the Teacher's Role 4
2. INDIVIDUALIZED INSTRUCTION AS APPLIED TO VOCATIONAL-TECHNICAL EDUCATION 5
   - Design Requirements for an Individualized Course 5
   - Instructional Requirements 6
3. DEGREES OF INDIVIDUALIZATION 9
   - Self-Study 9
   - Rate of Progress 10
   - Mode of Learning 10
   - Student Learning Needs 10
   - Learning Difficulty 11
   - Direction 11
   - Environment or Instructional Setting 12
   - Independent Study 12

PART TWO--DEVELOPING AND ADAPTING INDIVIDUALIZED MODULES 13

Chapter

4. PLANNING FOR INDIVIDUALIZED MODULES 15
   - Basic Curriculum Requirements 15
   - Individualization Feasibility Study 17
   - Feasibility Checklist 19
   - Sequencing the Teaching Content 20
   - Identify and Classify Learning Resources 23
   - Develop Required Additional Materials 24
   - Determine Desired Degrees of Individualization 24
   - Sample Plan for an Individualized Module 26

5. **DEVELOPING THE STUDENT GUIDES** 29
Components of Student Guides 29
Sample Student Guides 35
Sample 1 Prepare Checks for Payment 37
Sample 2 Servicing Spark Plugs 40
Sample 3 Typing Preprinted Business Forms 43
Sample 4 Measuring the Power Output 49

6. **DEVELOPING TEACHER GUIDES** 53
Basic Components of Teaching Guides 53
Sample Teacher Guides 57
Sample 1 Prepare Checks for Payment 59
Sample 2 Servicing Spark Plugs 61
Sample 3 Typing Preprinted Business Forms 67
Sample 4 Measuring the Power Output 86

7. **GUIDE FOR DEVELOPING MODULES** 95
1--Plan Instructional Requirements 96
2--Plan Instructional Strategies 97
3--Prepare Learning Activity Guide 98
4--Prepare Teaching Guide 99

8. **EVALUATING MODULES FOR POSSIBLE USE OR ADAPTATION** 101
Evaluation of the Total Package 101
Evaluation of the Instructional Materials 104

PART ONE--BASIC THEORY OF INDIVIDUALIZED INSTRUCTION

Before you attempt to design, adapt, or use individualized modules, you should understand some of the important things ABOUT individualized instruction. You should know some of the reasons why individualized instruction is now considered so important. As a vocational or technical instructor you should know how individualized instruction relates to your field of education. Since individualized instruction, by its very nature, is diverse, you should also understand the different degrees with which it can be used.

Part One was designed to present those basics in these chapters:

1–Individualized Instruction in Perspective
2–Individualized Instruction as Applied to Vocational-Technical Education
3–Degrees of Individualization

This material will provide you with some of the theoretical background so that you can better understand the development of modules explained in Part Two.

CHAPTER 1

INDIVIDUALIZED INSTRUCTION IN PERSPECTIVE

Many people have expressed concerns that in certain ways education has become dehumanizing. One concern is the mass production through which vast educational systems operate. For example, schools are said to "produce" so many thousand graduates a year. Educational facilities are sometimes referred to as "plants." Students are often identified as "entries" in the computer. Statistics refer to students entering the system as "input"; they refer to graduates as the "output." The scores of achievement are referred to as "gains." Consequently, many feel that students are considered as mere raw materials which are fed into the mass production machinery of an educational factory and shaped into the predetermined products. For that reason, more and more concerned people are suggesting that education be more individualized.

Individualized instruction is an attempt to take some of the mass production out of instruction and make it more personal. It is not an attempt to disorganize or desystematize, for efficient education must operate within an organized system. Neither is it an attempt toward permissiveness, but is an attempt to relate the instruction more personally, more individually to the student by providing an instructional system which meets each student on an individual basis according to individual learning needs. That kind of instruction, based on adaptive flexibility rather than rigid mold-filling, assumes the ultimate importance of the student.

There are several other reasons for the current emphasis on individualized instruction, among them the following: increasing concern for the worth of the individual, increasing awareness of individual differences, explosion of educational media, and the changing perception of the teacher's role.

INCREASING CONCERN FOR WORTH OF THE INDIVIDUAL

Our progress in democracy has included a long, continuous process in which the rights of individuals have been recognized and extended. For example, we started with a system in which only the white male property owners could vote; we now enjoy a system in which all who are old enough can vote regardless of race, sex, or economic status. Civil rights have been recognized and extended in other areas. Rights of workers have been recognized. Children have been protected against exploitation. All of this has come about because people become increasingly sensitive to the worth of the individual and the right to live "the good life"; to become, to develop, to realize one's potential as a person.

The increased concern for the worth of the individual has also affected education. For example, in our early history, education was available only to a select few, the elite who could afford it. Now it is available to all, and is considered both a necessity and a right. It is necessary to a meaningful life, and each person is worth educating. Education, therefore, exists to serve people; in serving them it should meet individual learning needs. Perceived in that light, education is not primarily a source of manpower for business and industry who DEMAND trained workers. It is a learning opportunity for persons who are free to CHOOSE occupations and professions.

INCREASING AWARENESS OF INDIVIDUAL DIFFERENCES

In recent years, educators have increasingly insisted that education designed to serve people must recognize that the people it serves are different in many ways. People differ in their occupational goals. Some want to become carpenters, some teachers, some lawyers, some cashiers. They differ widely in the things they like and dislike. Some enjoy working on cars and getting oil and grease on their hands; others would dislike that kind of work. People have different aptitudes. Some are brilliant at math; other have trouble with basic arithmetic. Some are good at working with ideas; others are good at working with people. People differ in how they learn. Some can learn well by reading; others learn best by hearing and seeing. Because of these and many other individual differences, the mass production, shotgun approach does not and cannot meet the needs of all students. The only approach which can is individualized instruction.

THE EXPLOSION OF EDUCATIONAL MEDIA

In the past, teachers were often regarded as the fountainheads of knowledge. They lectured while students listened and tried to absorb and remember what they had heard. That was probably necessary when books were handwritten, scarce, and not generally available. But even after the invention of movable type had made the mass production of books possible, teachers still continued to function as dispensers of information. Many have continued to do so in spite of such instructional media as films, TV, records, tapes, slides, filmstrips, sound-on-slide, programmed materials, and many others. But there is now so much media available that the teachers no longer need to be the source of knowledge and presenters of information. Furthermore, the media can not only present information but can be used to compensate for some of the individual differences. For example, those students who cannot learn effectively by reading can be given other media. In addition, it is possible with the proper use of media to let students progress at different rates. Individualized instruction, in summary, can use media more effectively than conventional instruction.

CHANGING PERCEPTION OF THE TEACHER'S ROLE

Because of the explosion in educational media, the teacher is no longer generally perceived as a primary source of knowledge. The teacher is now perceived as the one who plans the learning experiences, manages them, gives remedial, makes evaluations, and helps each student grow through a supportive teacher-student relationship. Because the teacher is no longer required to spend most of the time giving out information, he or she has more time to give individual attention and assistance. Individualized instruction is compatible with that role.

CHAPTER 2

INDIVIDUALIZED INSTRUCTION AS APPLIED TO VOCATIONAL-TECHNICAL EDUCATION

What are the main requirements for developing individualized instruction in vocational-technical education? There are certain requirements which should govern the design and certain requirements for the essential features of instruction. They are explained in this chapter.

DESIGN REQUIREMENTS FOR AN INDIVIDUALIZED COURSE

In vocational-technical education, the primary purpose of individualized instruction is to accommodate student learning differences while developing job competencies. This requires that an individualized course provide self-instructional learning resources, provide a job-like instructional environment and evaluate student achievement according to completion of job-relevant objectives.

SELF INSTRUCTIONAL LEARNING RESOURCES

In order for students to learn in any training environment or instructional setting they must be presented with certain information. Traditionally, the instructor has been used to provide information through various methods of instructor-centered presentations such as lectures, discussions, and live demonstrations. In that sense, the instructor has been used as a medium to transmit instructional information. But such use of the instructor as a medium has become less necessary as more and more instructional materials have become available. For example, a demonstration that once required live instructors can now be filmed. A lecture/discussion might be converted to a tape/slide presentation. A unit of theory once presented in a series of lectures or discussions might be converted to a programmed text. A workbench practical project that once required detailed guidance from instructors might be directed by a procedural type workbook or other performance guide. In these examples, the role of presenting information could be transferred from instructors to other media. It would be more effective to use those media for presenting information and allow instructors to manage learning activities. An individualized course, then, must be designed to use self-instructional resources.

JOB-LIKE INSTRUCTIONAL ENVIRONMENT

An individualized vocational-technical course requires that the teaching-learning activities be as similar to actual job conditions as possible. The more similar those teaching-learning activities to job conditions, the less transfer the students will have to make later on the job. An individualized course must include the job-like environment for two reasons:

• When actually performing on the job, a worker seldom does so in a group-paced fashion; he or she is expected to complete an assigned task as quickly and accurately as his or her ability permits. This means that the course should train each student to perform as an individual.

• The more students are required to participate in individualized instructional activities, the greater the likelihood that they will develop initiative and independence. In a conventional course, the students are GIVEN answers, decisions, and solutions; in an individualized course they are trained to PRODUCE them. Consequently, they not only progress in initiative and independence, but they also learn work discipline as they follow their own schedules and meet their self-imposed deadlines. An individualized course must provide the environment in which those things can happen.

ASSESSMENT OF JOB-RELEVANT OBJECTIVES

Not only must an individualized course contain self-instructional resources in a job-like environment, but the measurement of success should be based on achievement of job-relevant objectives. Then the individual progress of each student can be measured against specific objectives.

INSTRUCTIONAL REQUIREMENTS

While the course should meet the three design requirements explained in the previous section, the instruction itself should have certain features to enhance the individualized student-centered approach. Those features are:

The Orientation Toward Occupational Skills
Awareness of Instructional Objectives
Meaningful Learning Experiences
Progressive Learning Sequence
Maximum Independent Activity
Concrete Application
Self-Direction

ORIENTATION TOWARD OCCUPATIONAL SKILLS

Students who enter a program do so because they desire training in the skills and knowledges the program offers. For each of them, the instructional need is to become competent in the chosen occupation. This requires that the instruction be oriented toward the achievement of clearly defined skills. Those skills, when communicated to students, provide the sense of purpose and direction in individualized instruction.

AWARENESS OF INSTRUCTIONAL OBJECTIVES

Not only should individualized instruction be oriented toward occupational skills, but it should also communicate to students the objectives which specify what they will be able to do as a result of the instruction. Thus, the occupational skills provide the general goals; the objectives communicate the short-range goals, providing both direction and motivation.

MEANINGFUL LEARNING EXPERIENCES

Whether in individualized or conventional instruction, students learn through experiences. A learning experience, in individualized instruction, is a teaching-learning activity in which the students receive information, apply that information in a meaningful, job-related way, and then reinforce their application through knowledge of results.

PROGRESSIVE LEARNING SEQUENCE

In individualized instruction, learning experiences must not only be meaningful, but they must also be sequenced into a progressive learning order. Such a sequence makes it possible for the student who completes each experience to build upon the previous one and look forward to the next. In this way, the instruction can make the learning experiences both meaningful and progressive toward achievement of objectives and development of skills.

MAXIMUM INDEPENDENT ACTIVITY

In conventional instruction, the students are accustomed to being a part of the class. Typically, each listens along with the rest of the class, asks questions, participates in discussions from time to time, and often performs as part of a team or group. Often, students will pace themselves deliberately according to what they think is the normal pace for the class. If they are having no trouble with the information, they might indulge in daydreaming or thinking about personal matters until attention is required. In individualized instruction, however, they function more independently. They study information individually. They complete exercises at their own paces. They accomplish projects and perform tasks on their own, through their own efforts and at their own paces. This means that the instruction must contain as much independent activity as possible.

CONCRETE APPLICATION

Too often, conventional instruction has been conducted at the abstract level; that is, the instruction has been merely ABOUT something. But individualized instruction must involve the students in concrete experiences. Students do not LEARN ABOUT HOW TO file invoices; they learn by filing them. They do not merely learn ABOUT soldering printed circuit boards; they learn by soldering printed circuit boards. They do not merely study ABOUT how to record sales data; they learn BY recording sales data. Through such concrete application, they learn by doing; they achieve proficiency by practice and performance. This active involvement in concrete experiences gives the relationship, meaning, and importance to all the supporting skills and knowledges. Individualized instruction, then, must offer such concrete application.

SELF-DIRECTION

In conventional instruction, the class as a group is under the direction of the instructor who establishes the pace, moves from one topic to another, guides discussions, and gives direction for all activities. This direction is necessary in that case. Without it, there would be no organization, no direction, no coordinated efforts, and no discipline. But individualized instruction must offer self-direction. It must provide the students with directions for options, study, and detailed guidance for the completion of all exercises, projects, and tasks. With such direction, the students can proceed through the instruction without having to be told repeatedly what to do.

CHAPTER 3

DEGREES OF INDIVIDUALIZATION

What does it mean when one says that instruction is individualized? How does it differ from other instruction? To what extent does it differ?

Basically, individualized instruction is an application of the student-centered approach, but the extent of student-centeredness will depend upon the degree to which the instruction can be adapted to meet individual student needs. While all good instruction is student-centered to some extent, individualized instruction goes further and attempts to meet the student needs in different ways on an individual basis. But there are different degrees of individualization, depending upon what the student needs are and what can be done to meet them.

It is important for you to understand those different degrees for these reasons: (1) When you are developing individualized instruction, you must determine the degree or degrees you hope to achieve. (2) You must be able to describe what you have developed so that others can know what degrees to expect. (3) When you evaluate individualized materials developed by others you must recognize the degrees they offer in order to determine if they meet the needs of your students.

Chapter 4 explains the basic degrees of individualization. They are:

Self-Study
Rate of Progress
Mode of Learning
Student Learning Needs
Levels of Difficulty
Direction
Learning Environment
Independent Study

SELF-STUDY

One of the most common degrees of individualization is self-study. The term STUDY refers to how students acquire the necessary information–how they learn the supporting skills and knowledges. In conventional instruction, such information is often presented by the teacher through such methods as lecture, discussion, or demonstration/performance. Sometimes it is presented by various audiovisual media such as films or television so that the entire group receives the same information by the same media at the same time. But when the information is offered on an individual basis through such means as programmed texts, reading assignments, and individually-used audiovisual devices, it is self-study, a limited degree of individualized instruction, limited because it assumes that all will study at about the same rate.

When self-study is the only degree of individualization offered, the students participate in all OTHER activities as a group at the same pace. For example, the students might have two hours of self-study and then go as a group into a period of laboratory practice. Although the class is group-paced, the study of necessary information is individualized. Self-study is effective when the objectives are largely supported by group activities, but the necessary supporting information may be obtained through self-study. Some of the various media used for self-study are programmed texts, textbooks, study guides, information sheets, workbooks, assignment sheets, and various audiovisual packages.

RATE OF PROGRESS

Another common degree of individualization is self-pacing; that is, each student is allowed to progress at his or her own rate independently of the other students. It includes self-study, but it offers more individualization. Each student not only studies the learning materials at an individual pace but also does all related exercises, assignments, and projects at an individual rate. Thus, any student's progress depends entirely on his or her capabilities and efforts; she or he is not bound to a predetermined schedule of progress. In the simplest form of self-pacing, all students study the same materials, participate in the same learning activities and accomplish the same objectives, but at different rates. Self-pacing might be limited to self-study and the rate of progress, or it might be used in a combination with other degrees of individualization explained in the following sections.

MODE OF LEARNING

Not only can students be given opportunity to learn through self-study and at different paces, but they can also be given opportunity to learn through different means. For example, one student might learn better using printed materials while another can do better with audiovisuals. Some students learn better in a more physical, concrete mode of instruction in which they can see examples (such as film, audiovisual lessons, etc.) and respond by doing certain specific, concrete steps. On the other hand, some students learn better through more abstract, general modes (such as reading assignments) and are capable of transferring abstract information to actual job-like application. This degree of individualization might include only self-study in which students can select different media for their study, or it might also include self-pacing as well. Often it will include both. It might also be used with some other degrees explained in the following sections.

This degree of individualization is often more difficult to provide than simple self-study and/or self-pacing. This is true because different media must be made available for each teaching-learning activity.

STUDENT LEARNING NEEDS

Another degree to which instruction may be individualized is according to how it meets each student's needs for WHAT and HOW MUCH to learn. It is not necessary or desirable in ALL cases to have ALL students complete ALL of a program when some of them already

possess some of the required knowledges and skills. So, when possible to do so, the course may be so designed that each student is offered instruction only in those skills and knowledges he or she needs. This is usually determined by testing to find out what each student already knows and can do. When this is subtracted from the total requirement of the program, the remaining requirements become the individual learning prescription for the student. In fact, this degree of individualization is sometimes called individually prescribed instruction. Individualization according to learning needs may include self-study, self-pacing, and opportunities for selecting the modes of instruction.

LEARNING DIFFICULTY

Students learn at different levels of difficulty according to individual capabilities. Consequently, instruction can also be individualized to offer instruction at different difficulty levels. For example, one course is designed into three levels of difficulty, even though all students are expected to achieve the same objectives. At the lowest level, the instruction is arranged into small steps and the media presents the information with simplified detail, at a lower reading level, and contains numerous concrete examples to illustrate the principles and concepts. It builds toward each objective a small step at a time until the student achieves the objective. At the third and highest level, the instruction has these features: the teaching-learning activities are in large steps, the information is at a higher reading level, and is more generalized and condensed. The second or middle level is between the first and third levels and is generally designed for the average student. Upon entering the course, each student is tested and placed at the appropriate level of study. This form of individualization usually includes self-study and self-pacing. Any level--especially the lowest--may offer choices of media; and any level--especially the highest--might also be adaptable to WHAT and HOW MUCH instruction each student needs.

DIRECTION

How the student is directed in the teaching-learning activities is another degree of individualization. Basically, there are two kinds of student directions: course-direction and self-direction.

COURSE-DIRECTION

In a course-directed design, the course itself directs the objectives to be achieved by each student. Most courses fall into this category, for it is usually expected that each student achieve all stated objectives, either through demonstrated proficiency or through accomplishment of the teaching-learning activities as prescribed in the instruction. In vocational-technical education, course-direction is often necessary because of the job training requirements from which the objectives are derived.

SELF-DIRECTION

In a self-directed course, the students are given opportunity to select or "make contracts" with the course for the objectives they elect to achieve. Usually, they are offered a wide assortment of objectives directed toward certain educational or training achievements. However, in actual practice, this selection is seldom left entirely to the students, for they usually make their selection based on testing and counseling provided by the course. As stated in the previous paragraph, most vocational-technical courses are course-directed. However, in some courses, there is a modified degree of self-direction. The course directs certain required objectives; the students can select additional objectives and supplemental modules when they have achieved the course-directed objectives.

ENVIRONMENT OR INSTRUCTIONAL SETTING

This degree of individualization deals with WHERE the student accomplishes the individualized activities. In most cases it is both desirable and necessary that vocational-technical students learn in a controlled environment--the classroom, labor tory, workshop, or learning resource center. But sometimes the instruction may be individualized to the extent that students are not restricted to a controlled environment. They may select their own study environment such as their homes, the library, or media center. Some examples of this degree of individualization are correspondence courses, self-teaching mail-out packages, and instruction provided for home-bound students. This degree may also be used in a combination with other degrees of individualization

INDEPENDENT STUDY

Another degree of individualization which is becoming more popular, especially with the advanced or more mature students, is independent study. The students are provided a list of objectives and general guidelines for the activities or projects which demonstrate their achievement. The students then select their own learning resources--from a library, learning center, or other sources--and study independently in their own environments. Periodically, each student reports to a monitor or instructor for an evaluation of progress or assistance if it is required. Independent study incorporates self-study and self-pacing, and it is usually assigned according to different levels.

PART TWO--DEVELOPING AND ADAPTING INDIVIDUALIZED MODULES

Having studied the basic theory of individualized instruction in Part One, you are now ready to continue with Part Two. It contains the principles and procedures for developing and adapting modules for individualized instruction.

It begins in Chapter 4 with how to plan for individualized modules. This includes an assessment of the basic curriculum requirements, feasibility considerations and specific suggestions for sequencing, selecting learning resources, and planning learning experiences.

Chapter 5 explains how to prepare the student guides for individualized learning activities and contains selected samples for your convenience.

How to prepare teacher guides is explained and illustrated in Chapter 6.

A step-by-step procedural guide for developing modules is presented in Chapter 7.

Chapter 8 includes a guide for evaluating modules for possible use or adaptation.

CHAPTER 4

PLANNING FOR INDIVIDUALIZED MODULES

The total planning for the development of individualized modules should include an assessment of the basic curriculum requirements, a study of the feasibility for developing or using individualized instruction, an evaluation of the instructional sequence, a selection of the necessary learning resources, the possible development of additional supporting materials, the decisions concerning desired degrees of individualization, and the planning for the required learning experiences. They are presented in this order in Chapter 4.

BASIC CURRICULUM REQUIREMENTS

The development of individualized instruction must begin with a firm curriculum foundation. That foundation includes the occupational duties and tasks, instructional content, criterion-referenced objectives and measures, and instructional sequence.

OCCUPATIONAL DUTIES AND TASKS

No instructional development for any course, whether individualized or group-paced, should be attempted until the duties and tasks have been accurately determined and clearly defined. This is necessary in order to have individualized performance-based instruction and realistic practice.

INDIVIDUALIZED PERFORMANCE-BASED INSTRUCTION. Conventional instruction has sometimes been limited to teaching ABOUT something rather than teaching how to DO something. But individualized instruction can and must be used in teaching students to DO rather than only to verbalize or theorize. It is necessary, then, that the curriculum be based on systematic analysis of the duties and tasks required by the occupation which the instructional program supports.

REALISTIC PRACTICE. Individualized instruction has sometimes been restricted to such "pencil-and-paper" activities as completing the questions in a study guide or writing the responses in a programmed text. Although there may be some written activity as part of the required participation, the student activity in an individualized course should not be limited to that. The major activities should involve the students in learning by practicing those procedures and tasks for which they are being trained. Individualized instruction works best for vocational-technical education when it directs learning by doing. But in order to do that, it must be based upon clearly defined job-task requirements.

INSTRUCTIONAL CONTENT ANALYSIS

The tasks and knowledges in the curriculum should have been analyzed to determine what the students are expected to do and what they must be taught. This analysis is not only the basis for development of performance objectives and measures but is also the basis for essential teaching content. Complete identification of teaching content is critical in individualized instruction for these reasons:

INFORMATION TO BE TAUGHT. Individualized instruction must stand alone; therefore the selected media must provide ALL the necessary teaching information. This makes it critically important that all items and points of teaching information be identified in the beginning. Otherwise, there will be serious information gaps in the instruction.

SKILLS TO BE DEMONSTRATED. In conventional instruction, it is expected that the instructor will fill in some of the detailed procedural steps and personally teach any supporting skills that must be acquired. But since individualized instruction is expected to stand alone, it must teach all procedures and skills as well as the information. This makes it equally important that all procedures, steps, and skills be identified and detailed so that complete instruction can be provided.

CRITERION-REFERENCED OBJECTIVES AND MEASURES

The curriculum foundation must include performance objectives, enabling objectives, and achievement measures. No development of instruction should be attempted without them.

PERFORMANCE OBJECTIVES. Without clearly written performance objectives based on thorough and detailed task/knowledge analysis, no effective instruction can be developed. This is true regardless of whether the instruction is primarily "hands on" performance or knowledge oriented.

ENABLING OBJECTIVES. Derived from performance objectives, enabling objectives specify the periodic steps of mastery and achievement. Those steps are key components of individualized instruction.

MEASURES/EXERCISES. Before the design of individualized instruction is attempted, all measures for assessing student activity--progress checks, tests, subtests, and exercises--should have been carefully designed. They are even more important in individualized instruction because they provide, for both student and instructor, the means for evaluating progress.

EVALUATION OF INSTRUCTIONAL SEQUENCE

Prior to the development of individualized instruction, the criterion objectives, enabling objectives, and all teaching content should have been organized into a course outline for a progressive sequence. Although later development might require internal modifications to the sequence, there should be a basic, general framework from which to start. Otherwise, there could be repetition of content, or gaps in the instruction. Further directions for sequencing content will be covered in another section.

INDIVIDUALIZATION FEASIBILITY STUDY

Before developing individualized instruction, there should be a preliminary study to determine whether it is feasible to do so. Otherwise, development might be started and then forced to stop because of factors not considered earlier. This section, therefore, presents some of the important aspects of such a feasibility study. It includes the required instructional features, the expected benefits, the instructional facilities, the availability of learning resources, the administrative feasibility, and a feasibility checklist.

REQUIRED INSTRUCTIONAL FEATURES

When considering possible individualization, one should first of all make sure that it will be possible to have the required instructional features. Basically, the instruction must be so designed that each student can progress at an individual rate within course limits. This requires certain essential features including self-study, inherent directions, independent activities, and periodic evaluation.

SELF-STUDY OPPORTUNITY. In order for a student to set his or her own rate of progress, that student must be able to study at an individual rate. This requires two things of the instruction:

- It must present information on an individual basis.
- It must include all the necessary information.

INHERENT STUDENT DIRECTIONS. In addition to the provisions for self-study, each student must have complete directions for study and activities. Although an instructor is always present as the monitor and evaluator, time would not permit giving detailed directions to each and every student. Therefore, the instruction itself must guide most of the students' learning activities.

INDEPENDENT LEARNING ACTIVITIES. Not only must the students have access to complete study materials and specific directions, but they must also be able to perform each activity (exercise, criterion exercise, criterion progress check) when they are ready to do so. A question, therefore, that must be considered is: Will the instruction be able to provide this independent activity? If activities contained in the program are written exercises and problems, there is usually no difficulty. But if they require performance on equipment, then such equipment must ALWAYS be available for each student. Otherwise, the waiting required to perform on equipment would defeat the purpose of individualized instruction.

PERIODIC PROGRESS EVALUATIONS. The students in an individualized course are never COMPLETELY on their own. Even though each studies individually and performs independently, there must be periodic evaluations of progress. The instructor must be able to provide them.

EXPECTED BENEFITS

When considering the possible benefits that might come from individualization, at least

four should be considered. They are number of students, increased instructional effectiveness, improved instructional efficiency, and development costs.

NUMBER OF STUDENTS. The number of students who will receive the instruction is a major consideration. For example, if a program is to be used statewide, then benefits could be significant if individualization could result in increased graduate proficiency. Ideally, those courses reaching the greatest number of students should be given priority over those with least number of students, other factors remaining equal. It would not be cost-effective to spend time and effort on a course taught to only a few students per year as long as an existing course is reasonably effective in meeting the objectives.

INCREASED INSTRUCTIONAL EFFECTIVENESS. One of the primary reasons for individualization is to make instruction more effective in terms of graduate proficiency. As a general rule, the effectiveness of a program is closely related to the degree of carefully planned and controlled student-centered activity--the greater the degree and intensity of such activity, the greater learning and proficiency. The designer, therefore, should question whether individualization will increase the effectiveness of instruction.

IMPROVED INSTRUCTIONAL EFFICIENCY. Not only must individualization make instruction more effective; it must also make it more efficient. Thus the designer should consider whether individualization can be expected to operate in a more efficient manner. Will it make it easier for students to progress? Will it provide better and more job-relevant use of materials and resources? Will it make the course easier to administer in terms of activity, supervised study, and evaluated performance? The ideal benefit is a course that is both effective AND efficient.

COST OF DEVELOPMENT. If it appears that significant benefits can be expected from individualization, then the designer should consider whether the development cost of the required instruction is justified. In other words, are the expected benefits worth the cost of both time and resources.

INSTRUCTIONAL FACILITIES

It is also necessary to evaluate the facilities to determine if the instructional setting is equipped to accommodate an individualized course. Some of the aspects that should be considered are the learning environment, accessible storage space for learning resource materials, assigned instructors, and the central instructor base or station.

LEARNING ENVIRONMENT. In order to conduct an individualized course, there must be a satisfactory learning area. This area--usually a designated classroom--should be relatively free of noise and other distractions. It should also be large enough to contain the necessary learning materials and equipment such as audiovisual projectors and actual equipment.

ACCESSIBLE STORAGE SPACE FOR LEARNING RESOURCES. An individualized course will likely require a variety of learning resources such as texts, handouts, diagrams, worksheets, tapes, slides, projectors, record players, tools, models, and working equipment. It should be possible to store those resources either within or near the learning area. Otherwise, the students will spend part of their time obtaining those resources as they are needed.

ASSIGNED INSTRUCTORS. Individualized instruction is not intended to reduce the number of instructors, although this sometimes happens when a course becomes more efficient. On the other hand, a course will sometimes need more instructors or aides, primarily because of the increased demand for individual attention and evaluation. This means that there must be enough instructors and aides (if necessary) to conduct the instruction.

CENTRAL INSTRUCTOR BASE OR STATION. Ideally, each student in an individualized course works at a learning station–a desk, table, or workbench to which he or she brings all learning resources and which is the central point for most of the self-paced activities. For best results, the instructor should likewise have his or her own central base of operation at which to meet with the students to provide assistance and evaluate performance. If such a station--a desk, table and/or evaluation center--is available, then the student will not be unnecessarily distracted as he or she meets with the instructor. This will also enable the instructor to plan and control his or her own activities more effectively.

AVAILABILITY OF NECESSARY LEARNING RESOURCES

The students will need a variety of learning resources. For in addition to the learning activity guides which direct their activities, they will often be required to use various resources such as tapes, slides, trainers, workbooks, etc. Such resources must be on hand and available on an individual basis. The designer shoul, therefore, determine beforehand if enough will be available without any student having to wait and thereby waste time. For example, if a projector is required, then there should be more than one projector, otherwise students will have to wait. Or if a workbench with tools is required, then there should be enough workbenches to accommodate all students who need to use them when they are ready to do so.

ADMINISTRATIVE FEASIBILITY

Since there are likely to be some administrative problems associated with an individualized program, they should be considered and worked out before development begins. Two areas to consider are class size and instructor management.

In order for an individualized course to operate efficiently, the class size should be within manageable limits. If, for example, there is only one instructor, the number of students should not be more than that instructor can manage. Furtheremore, if students must be separated from the instructor for example, going to a shop for practice or to a learning resource center, then the instructor might have difficulty supervising all the students. The basic question to be considered is whether it will be possible for the instructor to manage the class. Otherwise, individualization might not be administratively possible.

FEASIBILITY CHECKLIST

The following checklist will help you decide if it is feasible to develop individualized instruction.

1. Are the necessary media available or obtainable for complete self-study? If not, the individualization will be severely limited.

2. Can directions be written to guide the individualized teaching-learning activities? Without them, there will be confusion.

3. Will each student be able to perform any and all of the required activities whenever he or she is ready to do so? Excessive waiting can cause serious problems.

4. Will an instructor be available at all times for individual assistance and evaluation? If not, group instruction might be more feasible.

5. Does the projected number of students justify the development of an individualized course? It might be more feasible to continue the existing instruction, making improvements as necessary.

6. Are there good reasons to believe that individualization will increase the effectiveness and efficiency of the instruction? If not, change for the sake of change would not be justified.

7. Do the expected benefits justify the time and cost of development? Can acceptable modules be purchased if time and cost for development are not justified?

8. Is the learning environment adequate for individualized instruction? Can it be modified, if necessary?

9. Are the learning resources accessible to the learning environments? Can they be made accessible?

10. Can the assigned instructors conduct the course or will additional instructors be required? Consider the possibility of aides or advanced students.

11. Can each instructor be provided a convenient monitoring location within the learning environment? If not, the instructor's role will be limited.

12. Is the class size within manageable limits? Will the instructors be able to keep control of the students on an individual basis?

SEQUENCING THE TEACHING CONTENT

If the feasibility study is positive, you can continue with the planning for individualized instruction. The next major step in planning is to sequence the teaching content. This sequencing is more precise than the course sequence discussed in a previous section and includes the specific skills and knowledges to be included in the instruction. This section, therefore, reviews the teaching content sequencing considerations and procedures as they apply to individualized instruction.

BASIC REASONS FOR CONTENT SEQUENCING

A teaching sequence is the most effective order in which all skills and knowledges, enabling objectives, performance objectives, and teaching-learning modules are presented in a progressive series of learning experiences. As such, effective sequencing serves several purposes.

- An effective sequence makes the instruction meaningful to the students. If instruction is presented in a progressive sequence, the students develop a sense of purpose--of learning for specific, job-related purposes. Sequence, therefore, can help to motive students by providing a sense of direction and achievement. On the other hand, a poor sequence can confuse and demotivate students.

- An effective sequence can help to prevent unnecessary repetition. Within any course,

there are likely to be knowledges and skills which are closely related to different objectives. Without careful sequencing, the module for one objective might include knowledges and skills already included in another module.

- An effective sequence helps to prevent gaps in the instruction. Without detailed, careful sequencing, some important knowledges and skills might be left out or taught out of sequence. For example, if information on safety is not in the correct sequence, the students might perform several tasks without understanding the safety precautions. Such a lack of knowledge could cause damage or injury.

- An effective sequence makes it more likely that tasks will be learned in an orderly, progressive pattern. When students can see the "big picture" of the course, that is, the job and the tasks involved, they will expect to learn the job and the tasks involved, skill by skill, task by task, until they have mastered the entire course.

SOME BASIC PRINCIPLES FOR SEQUENCING INDIVIDUALIZED INSTRUCTION

The following principles will serve as general guidelines for sequencing.

- If possible, present the easily-learned objectives in one of the earlier modules. Then the students will not be frustrated by difficult or complex instruction early in the course.

- Place concepts where knowledge of them is necessary for subsequent performance. For example, operating principles may be taught just before operating procedures.

- Place instruction in prerequisite skills before other skills with which they may be combined later for practice and performance.

- If possible, place procedural skills and knowledges in the same sequence as required in the actual work environment.

- Place a new knowledge or skill where it will first be applied, except a skill or knowledge which applies to more than one task. In that case, the skill or knowledge could be combined with others and taught as preparatory knowledges or skills.

- Provide for practice of skills and knowledges at those points where transfer of learning appears to be most difficult.

- Arrange large segments of knowledges in the beginning of the course or in the beginning of the appropriate major division.

- Place common element objectives early in the sequence, either in the beginning of the course or at the beginning of the appropriate divisions.

COMMON TYPES OF SEQUENCING

Basically, there are three types of sequencing: job order, ease of learing, and logical order. Seldom, however, does a designer use only one method, for the complete sequencing of a course is likely to involve all three methods to some extent.

JOB ORDER. One method of sequencing, which applies to many vocational-technical courses, is the job order in which the procedures of a task, subtask, or task element are arranged in the same order as performed on the job. This relates the student activities very closely to the job and makes the instruction more realistic. Also, it is much easier for the student to transfer what he or she learns in the course to the job.

EASE OF LEARNING

This type of sequencing can be accomplished in different ways as explained below.

- Instruction begins with something the students already know and progresses to new knowledges. For example, if the students already know simple circuits, the instruction can begin at this point and go on to more advanced circuits. By transferring the knowledge of simple circuits, students can more easily learn the other type of circuits. This is sometimes called the known-to-unknown sequence.

- Instruction begins with a short, simple procedure and continues until the students have mastered a more complicated procedure. For example, in photography the instruction might begin with loading and unloading film and then proceed to other operations such as setting the camera for light readings, range, f stop, etc. This kind of sequence is called the simple-to-complex.

- Instruction begins with the easiest procedures and continues until all more difficult procedures have been mastered. For example, in automotive tune-up, the instruction could begin with the installation of spark plugs and progress to points, condenser, timing, etc. This kind of sequencing is known as the easy-to-difficult.

- Instruction begins with a simple example and continues until the rules have been learned. For example, instruction in X-ray exposure techniques might begin with a study of film showing differences in density and contrast, and progress to a study of the exposure principles that control density and contrast. This method is sometimes called the concrete-to-abstract.

- Instruction begins with a model of the finished product and continues with a breakdown into parts or steps. For example, it begins with the model of a complete circuit and then proceeds to each of the components. The value of this method lies in the fact that if the students can see the whole or big picture, they can more readily understand how the component parts fit together. This is called the general-to-specific or whole-part sequence.

LOGICAL ORDER. Sometimes the content of instruction will fall into a logical pattern because of the combined elements of job performance and ease of learning. For greater

learning effectiveness, teaching-learning activities should normally proceed from known-to-unknown, simple-to-complex, easy-to-difficult, etc. But many teaching-learning activities will not lend themselves to that order. Then the sequence must be the most logical combination. For example, the performance procedures might be in job performance order while the supporting skills and knowledges might be in an ease of learning order.

SUGGESTED SEQUENCING PROCEDURES

The following suggested procedures apply to the complete sequencing of a course, from the specific content to the modules.

- Sequence the supporting skills and knowledges for each enabling objective. If the task analysis has been accomplished properly, each task element will contain not only the detailed procedures to be followed but also a detailed listing of the supporting skills and knowledges. To prevent any duplication of teaching content, you should sequence the supporting skills and knowledges for all enabling objectives.

- Sequence the enabling objectives within each performance objective. Basically, this sequence will follow the job performance order for a task performance except that any knowledge-type enabling objective must be placed at the proper place for ease of learning. For example, enabling objectives dealing with the nomenclature and location of components should probably come before an enabling objective on disassembly of components.

- Sequence performance objectives into modules. Generally defined, a module may consist of one or more closely related performance objectives. As a general rule, however, a module is usually limited to a task; a task usually has one performance objective.

IDENTIFY AND CLASSIFY LEARNING RESOURCES

When the sequencing has been completed, the next step is to identify all learning resources and correlate each medium to the instructional content it supports. You should remember that in an individualized course the media ALONE must provide the instructional information. All content, therefore, must be covered. Here, then, are some suggested procedures.

- Begin with the first enabling objective and continue--in sequence--until all the media for its content have been identified. By working in sequence, it is easier to verify the sequence determined earlier, identify any overlapping content, and identify any media that may be used more than once.

- For the teaching content of each enabling objective, identify all media that present information on the content.

- Then classify the media selected for each enabling objective into the following categories:

PRIMARY MEDIA. This should be those media which contain all information and which can be used by all students if no alternate choices are available.

ALTERNATE MEDIA. In addition to the primary media, identify those in different modes which contain the same information. This will provide the students with study options.

DIFFICULTY LEVELS. If appropriate to do so, it is helpful to classify each item of selected media into two or more levels of difficulty. Difficulty refers to the reading and comprehension level such as length, detail, vocabulary, and examples. This classification will be useful if you decide to individualize according to difficulty levels.

DEVELOP REQUIRED ADDITIONAL MATERIALS

When all of the available media have been selected and classified, there might be some gaps in the instructional information--some skills or teaching points not covered or even a subobjective for which there is no media available. If there are gaps, the required materials, either printed, aural, or audiovisual, must be developed or otherwise obtained.

DETERMINE DESIRED DEGREES OF INDIVIDUALIZATION

Here are some basic guidelines to help you decide on the degrees of individualization you hope to achieve.

SELF-STUDY

In some courses, the only possible degree of individualization is self-study. Here are some conditions which indicate this limited degree.

- The students must meet regularly for group instruction and other activities.
- Only the study of information may be provided on an individual basis. All students must meet the same schedule.
- The media are available for self-study.

RATE OF PROGRESS

Self-pacing may be offered under these conditions:

- Each student will be allowed to progress independently of the others.
- Self-instructional resources will be available for all teaching-learning activities.

MODE OF LEARNING

If, in the research of the learning resources, alternate media are identified for each enabling objective, then it will be possible to individualize so that each student can, as he or she proceeds with the teaching-learning activities, select the items of media from which to study.

STUDENT LEARNING NEEDS

Consider this degree if:

- There are significant variations in student experience and prior knowledge.
- Pretests can be provided to assess entry levels.
- Subsequent instruction can be prescribed on the basis of entry levels.

LEARNING DIFFICULTY

This degree of individualization may be considered under these conditions:

- There are significant ability levels among the students.
- Self-pacing alone cannot accommodate those with lower abilities.
- The instruction can be designed into two or more levels of difficulty.
- Instructional resources are available to support each level.

DIRECTION

Most vocational-technical courses will be course-directed because of the occupational requirements. However, if it is possible, students may select specialized or generalized modules to meet their occupational goals. For example, in a complete auto mechanics program, some students could select those modules which produce a general mechanic; others might wish to specialize. If self-direction is permitted, then all modules must be available.

ENVIRONMENT OR INSTRUCTIONAL SETTING

Generally, vocational-technical courses are conducted in the school or college environment.

INDEPENDENT STUDY

If your course is designed for mature and advanced students, you might consider a modified form of independent study. Some of the conditions conducive to this degree are as follows:

- The students are responsible and motivated.
- No supervised practice and performance on equipment is required.
- The projects required in the course will result in end products which can be accomplished independently and evaluated as finished products.

- The learning resources are available both for use in the learning resource center and for checkout.

- Only limited supervision and periodic evaluations are required.

SAMPLE PLAN FOR AN INDIVIDUALIZED MODULE

Provided a blank check for study use and information concerning date, payee, drawer, amount, previous deposits and balance, and check writing guidelines, prepare the check and stub without error.

A. TASK: Prepare checks for payment

B. PERFORMANCE OBJECTIVE:

Provided a blank check for study use and information concerning date, payee, drawer, amount, previous deposits and balance, and check writing guidelines, prepare the check and stub without error.

C. DEGREES OF INDIVIDUALIZATION:

Self-Study
Rate of Progress
Mode of Learning
Student Learning Needs

D. CONTENT:

(Enabling Objectives, Skills, Knowledges in Teaching Sequence)

1. Given a list of the terms that pertain to checks, write the correct definition for each term.

   a. Check - written order from depositor directing bank to pay specific sum of money to one named on check.
   b. Cash - coins, paper money, checks, money orders, and money deposited in bank.
   c. Currency - paper money.
   d. Signature card - card filed by bank to show who is authorized to sign checks for the account.
   e. Depositor - one in whose name money is placed in the bank.
   f. Drawer - the depositor.
   g. Drawee - the bank.
   h. Payee - the one who receives the check.

2. Given a completed sample check, label each part of the check and stub.

   a. The stub or source document
      (1) Check number and amount
      (2) Date
      (3) Payee
      (4) Reason for payment
      (5) Balance brought forward
      (6) Deposits
      (7) Total
      (8) Balance less check

   b. The check
      (1) Check number
      (2) Date
      (3) Payee
      (4) Figure amount
      (5) Written amount
      (6) Drawee
      (7) Drawer
      (8) Signature
      (9) ABA numbers
      (10) Magnetic ink character

3. Given information on required check payment and a blank check stub, fill in the stub without error.

   a. Make sure balance is up-to-date.
   b. Record deposits.
   c. Total previous balance.
   d. Record amount of check.
   e. Subtract and record new balance.
   f. Record balance on next check stub.

4. Provided information on payment by check and sample check, write the check without error.

   a. Write check number if not prenumbered.
   b. Write date on which check is being issued.
   c. Write payee's name in full.
   d. Write amount of check in figures.
   e. Write amount in words.

(1) Begin at extreme left.
(2) Separate dollars and cents with word "and."
(3) Write cents as fraction of 100.
(4) Draw line from cents to "dollars."
(5) For amount less than $1, write "only - cents."

E. INSTRUCTIONAL MEDIA:

Textbook (P)
Audiovisual Package, "Introduction to Checks" (A)
Audiovisual Package, "Check-Writing Procedures" (A)
Information Sheet, "Introduction to Checks" (A)
Assignment Sheets, "Check-Writing Terms" (P)
"Parts of a Check" (P)
Task Sheet, "Check-Writing Procedures" (P)
Worksheet (P)
Pretest for knowledges (A)
Posttest for knowledges (P)

F. DESCRIPTION OF MODULE:

When beginning the module, the student will have the option of taking the pretest for the knowledges. Upon passing the pretest, the student will then be given opportunity to challenge the criterion measure for task performance. Successful completion of both will satisfy requirements for the instruction.

If the student does not take or does not pass the pretest, he or she will proceed to an information lesson. The optional media will provide the information. Exercises will provide for application of the knowledges.

Upon completion of the information lesson, the student will take the posttest. Satisfactory completion will qualify the student to continue with practice.

After the practice, another assignment will require a project for formal evaluation.

The teacher will insure that materials are available and monitor student progress. The teacher will also evaluate pre and posttests and the evaluation projects.

CHAPTER 5

DEVELOPING THE STUDENT GUIDES

When the individualization for a module has been planned, the next step is to prepare that part of a module which will guide the student in the teaching-learning activities. Such guiding parts are called by several names such as student guide, study guide, learning activity plan, or student manual. The guide may consist of one page or a dozen, depending upon the material and length of the module. But regardless of the title and the length, there are certain functional components which make up an effective guide. Chapter 5 explains those components and presents some examples.

COMPONENTS OF STUDENT GUIDES

Student guides may be found in a variety of styles and formats. However, there are certain functional components which most of them have in common. They are present in this section as follows:

Introduction
Objective
Directions for Pretest (if used)
Materials
Information Lesson
Application
Evaluation

INTRODUCTION

The purpose of this component is to prepare the student for the module. Such an introduction usually includes transition from a previous module, an explanation of how the module will further the student's progress, an attempt toward motivation, and a brief preview of the content. Such an introduction can give the big picture to the student, explain the organizational structure and motivate toward achievement of the module. The introduction is an important element which, if properly written, can establish an effective learning set for the student.

Here is a sample introduction from a photography module.

INTRODUCTION

In the last module you learned how to operate the basic camera to take pictures. But before you use the camera to actually make pictures, you must be able to compose them. This is important, for the quality of your photographs will depend to a great extent upon how they are composed; that is, how the images will be arranged on the photographs. This module was designed to teach you the basic guidelines for composing pictures. By applying these guidelines, you will be able to compose your pictures correctly and to evaluate pictures made by others.

Some other headings used to identify or set apart the introduction components are as follows:

WELCOME TO SPARK PLUGS (or other subjects)
WHAT THIS MODULE IS ABOUT
TIME TO BEGIN
BEGIN HERE
WHAT'S UP?

OBJECTIVE(S)

The component should include all objectives, both performance and enabling for the module. The enabling objectives should be presented in the order in which the student will be expected to achieve them. The objectives may be stated in complete behavioral terms or they may be paraphrased. The important point is that they inform the student as to what is expected.

Here is an example of how the objectives are explained in a module.

OBJECTIVES

This module was designed to prepare you to do this objective:

Given an automobile needing spark plug service and access to the appropriate tools, equipment, and service manual, clean and gap the spark plugs and place them back into the automobile according to the manufacturer's specifications and procedures.

In learning to do this performance objective, you will reach these objectives as you progress through the module:

1. Explain spark plug composition.
2. Identify spark plug components.
3. Identify spark plug conditions.
4. Remove spark plugs.

5. Clean spark plugs.
6. Set spark plug gaps.
7. Test spark plugs.
8. Install spark plugs

Some other headings used to identify this component are:

WHAT'S EXPECTED OF YOU
WHAT YOU WILL LEARN TO DO
WHAT YOU SHOULD ACCOMPLISH
YOUR OBJECTIVES

DIRECTIONS FOR PRETEST

If a pretest is to be used as part of the module, the students should be given directions for taking the pretest. They should also be told whether the pretest is optional or required. The following is one example of how the directions for a pretest may be written.

DIRECTIONS FOR PRETEST

This module includes a pretest on the information. If you feel that you already know the information, you may take the pretest at this time if you wish to do so.

Notify the instructor now if you wish to take the pretest.

If you pass the pretest, turn in your student guide to the APPLICATION on page 3 and continue with that section.

If you did not pass the pretest, continue with the next section.

Some other titles used to identify this component are:

TIME TO CHALLENGE
HOW TO GET CREDIT
HOW MUCH DO YOU ALREADY KNOW?
WHAT CAN YOU ALREADY DO?

EQUIPMENT/MATERIALS

This section should include a listing of all learning resources to be used in the module. Although the use of each item will be specifically directed later in the module, it is always helpful to present a complete list at this point so the student can make ready for the instruction by obtaining or locating all resources needed in the module.

[32] The following excerpt shows how the resources were listed in one module.

EQUIPMENT/MATERIALS

You will need the following materials in this module:

Typewriter
Instruction manual for typewriter
Ruler
Pen
Pencil
Plain typing paper
Scissors or paper cutter
Textbook or other materials on typing tabulated materials
Learning Activity Package

If available and directed by the teacher you will also use.

- Filmstrip, "Typing Tabulated Information"
- Tape cassette, "Typing Tabulated Information"
- Filmstrip projector
- Cassette tape player

Other headings used to identify this component include the following:

WHAT YOU WILL NEED
WHAT YOU WILL USE
YOUR LEARNING RESOURCES
EQUIPMENT AND SUPPLIES

INFORMATION LESSON

In most modules there is a body of information which must be learned. This usually includes the necessary facts and principles and often a demonstration and explanation of how the task is performed. The information lesson will usually include one or more of the following elements:

- When there are different options for study, those options will be explained.
- When there are options for the media they will also be explained.
- Specific directions for study will be given.
- There may also be directions for the posttest if one is used.

The following excerpt illustrates one type of information lesson in which there are different options:

INFORMATION LESSON

This portion of the module was designed to teach you the procedures for typing tabulated information.

LESSON DIRECTIONS

You will be asked to learn the information on typing tabulated information in one of the ways described below.

- Your teacher may conduct the lesson in a regular classroom explanation and demonstration. You will complete the Learning Activity Package as part of this lesson.

- Your teacher may conduct a study assignment in class using your textbook and other materials and the Learning Activity Package. If you have been told to do this, your teacher will tell you what to study. Write those references in these spaces.

_____

_____

You might be required to study the audiovisual package on an individual basis using the Learning Activity Package.

You might be asked to complete the lesson out of class, using your textbook and other materials. When you come to class, you will have a review and then complete the Learning Activity Package. If you have been told to do this, your teacher will tell you what to study. Write the study references in these spaces.

_____

_____

If you have been told to use one of the self-study methods above, you should begin at this point.

When you have completed the information lesson you will be ready to take the posttest.

The following are some of the different titles used to identify the information lesson component:

TIME TO STUDY
LEARN ABOUT_____
LEARN HOW TO_____
READY TO LEARN?
MATERIAL TO BE LEARNED

APPLICATION

In order for the student to develop proficiency in the mental or manipulative skills being taught, the module must provide the opportunity and setting for practice. Such practice is included in the APPLICATION section. This section tells the student what to do and often makes use of performance aids such as task sheets, checklists, and other aids. It is understood that the student can practice the prodecures as many times as necessary.

The following excerpt shows how the application has been provided in one module:

> APPLICATION
>
> This section was designed to provide you with practice in applying what you have learned about typing tabulated information. However, if you have completed the Learning Activity Package without any difficulty, your teacher may tell you to skip this section.
>
> For the typing assignment in this section, follow this general guide:
>
> 1. Select appropriate supplies.
> 2. Make necessary typewriter adjustments:
>   a. Set margins
>   b. Adjust line space regulator
>   c. Set appropriate tabs
> 3. Insert paper into typewriter and type copy.
> 4. Proofread carefully, correct all errors, and remove copy from the typewriter.
>
> Type the following table in correct format with columnar headings. Single space the body of the table.
>
> ATTENDANCE DATA FOR 1978-79
>
> | SCHOOL | NUMBER ENROLLED | AVERAGE DAILY ATTENDANCE |
> |---|---|---|
> | Whiteside | 694 | 675 |
> | Blount | 714 | 670 |
> | Smithville | 812 | 750 |
> | Brown | 915 | 875 |
> | Dunlap | 475 | 450 |
> | Pikeville | 512 | 475 |
> | Jasper | 675 | 650 |
> | Pope | 902 | 875 |
>
> When your teacher has approved this exercise, you will be ready for the EVALUATION in the next section.

Some of the other ways this component may be identified are as follows:

PRACTICE SESSION
READY FOR SOME PRACTICE?
NOW PUT IT TO USE
APPLY WHAT YOU HAVE LEARNED
TIME FOR PRACTICE

EVALUATION

After the practice, most modules usually direct the student into a more formal evaluation situation. The task or project completed will now be evaluated by the teacher.

The following is an example of the evaluation exercise from one module:

EVALUATION

Type the following exercises and give them to your teacher for evaluation. When the teacher has approved them, you will have completed the module.

1. Type the following announcement on a half sheet of paper inserted with the short edge against the paper guide. Center each line individually. Triple space between each line.

Clerks' Monthly In-service Meeting
Monday, August 24
8:30 a.m. until 5:00 p.m.
in the departmental cafeteria

PLEASE BE PRESENT!

2. Type the following table in correct format with columnar headings. Single space the body of the table.

Schedule of Courses for Office Occupations Majors

Sophomore Year	Junior Year	Senior Year
English	English	Business English
World History	Typing II	Shorthand II
Typing I	Shorthand I	Office Procedures
Business Math	Accounting I	Accounting II
Elective	U.S. History	Elective

Some of the other titles used for this component are as follows:

CHECK-OFF TIME
CHECK POINT
SHOW WHAT YOU CAN DO
TIME FOR EVALUATION
EVALUATION EXERCISE

SAMPLE STUDENT GUIDES

The following student guides were included to provide examples of how such guides can be developed and used.

The student materials and other media are not included but are referred to in the student guides.

Four samples are presented, each with a slightly different format but containing the necessary comments. They are:

Sample 1 - Prepare Checks for Payment

Sample 2 - Servicing Spark Plugs

Sample 3 - Typing Preprinted Business Forms

Sample 4 - Measuring the Output Power

SAMPLE 1

PREPARE CHECKS FOR PAYMENT

INTRODUCTION

You will need to write checks correctly whether you write personal checks for your own use or whether you write them for others to sign. If a check is not correctly written there will be embarrassment, wasted efforts and perhaps loss of money. So why not write them correctly? This lesson will prepare you to do that. As you go through the module you will learn:

- The terms pertaining to checks.
- The parts of a check.
- The procedures for writing a check.

After you have written some checks for practice, you will be asked to write a check for your teacher to evaluate.

YOUR OBJECTIVES

This module was designed to prepare you to reach this performance objective:

Provided a blank check for student use and information concerning date, payee, drawer, amount, previous deposits and balance, and check writing guidelines, prepare the check and stub without error.

In learning how to accomplish this objective, you will complete these enabling or helping objectives:

1. Given a list of terms pertaining to checks, write the correct definition for each term.

2. Given a completed sample check, label each part of the check and stub. Label all parts correctly.

3. Given information on required check payment and blank check stub, fill in the stub without error.

4. Provided information on payment by check and sample check, write the check without error.

TIME TO CHALLENGE

This module was designed to give you credit for what you already know and can already do.

If you feel that you already know the terms used in checkwriting and the parts of a check, you may take the pretest.

Tell your teacher now if you would like to take the pretest. When you have taken the pretest, do one of the following:

_____If you passed the pretest, you may now take the proficiency test on writing checks. Notify your teacher now if you wish to take the proficiency test. If you pass that test you may go on to the next module. Otherwise, continue with the TIME FOR PRACTICE section.

_____If you did not pass the pretest, continue with the next section in the module.

YOUR LEARNING RESOURCES

For this lesson you will need the following:

1. Your textbook, BANKING PROCEDURES
2. Package of materials, "Prepare Check for Payment"
3. Sample checks for practice and evaluated performance

Make sure you have the materials before you go on.

TIME TO STUDY

This part of the module was designed to teach you the things you need to know about checks. It includes three learning activities. Check each of them as you complete it.

1. Open your package, "Prepare Check for Payment." Begin with Assignment Sheet 1-1. Study from the resources you select and complete the work as directed.

_____Check when completed

2. Complete the selected study and work as directed in Assignment Sheet 1-2.

_____Check when completed

3. Notify your teacher that you are ready for the information posttest.

_____Check when you have taken and passed the posttest

TIME FOR PRACTICE

It is now time for you to have some practice in checkwriting. Remove Task Sheet 1-3 from your package. Using it as your guide, complete the work directed in Assignment Sheet 1-4.

_____Check when completed

EVALUATION EXERCISE

You are to complete this project for evaluation.

Using Task Sheet 1-3 for reference, complete the project in Worksheet 1-5. When you have completed this project, turn it in to your teacher for evaluation.

SAMPLE 2

SERVICING SPARK PLUGS

WHAT THIS MODULE IS ABOUT

As an automotive mechanic you will be required to service spark plugs. This is an important task, for properly firing spark plugs make the engine run without losing power and without wasting fuel. Not only will this task help you to do a better job, but it will also help you service your own car.

This lesson will teach you how to service spark plugs. It includes the things you need to know and the things you must be able to do.

WHAT YOU WILL LEARN TO DO

As a result of this module you will be able to meet this performance objective:

Given an automobile needing spark plug service, and access to the appropriate tools, equipment, and service manual, clean, gap, and test the spark plugs, and place them back into the automobile according to the manufacturer's specifications and procedures.

In learning to do that objective you will meet these learning objectives:

1. Identify the basic composition of spark plugs.
2. Identify spark plug components.
3. Identify spark plug conditions.
4. Remove spark plugs.
5. Clean spark plugs.
6. Set spark plug gaps.
7. Test spark plugs.
8. Install spark plugs.

LIKE TO GET CREDIT?

This module offers you an opportunity to show what you already know and can do. This means that it might be possible to get credit for part or all of the module.

First, there is a pretest on the things you should know about spark plugs. If you can pass that test you will not need to study the information, instead you can go on to the practice.

Notify your teacher now if you wish to take the pretest.

------1. If you passed the pretest, you may move on to the PRACTICE section or take the proficiency test.

Notify your teacher now if you wish to take the proficiency test. Otherwise, go on and continue with the PRACTICE section.

_____2. If you did not pass the pretest, continue with the next section in the module.

Secondly, as mentioned above, there is a proficiency test for the module.

1. If you have taken and passed it, you may now go on to the next module.

2. If you did not pass the proficiency test, continue in the module with the PRACTICE section.

WHAT YOU WILL NEED

You will need these materials to complete the module.

1. Your textbook -- chapter on Spark Plugs
2. Tape/filmstrip program, "Introduction to Spark Plugs" (optional)
3. Assignment sheet, "Spark Plug Composition, Components, and Conditions"
4. Automotive service manual
5. Job Sheet, "Servicing Spark Plugs"
6. Film, "Servicing Spark Plugs"
7. Engine with spark plugs installed
8. Spark plug wrench
9. Spark plug tester (with directions card)
10. Spark plug cleaning machine (with directions card)
11. Feeler guage
12. Assorted spark plugs
13. Pretest (provided by teacher)
14. Posttest (provided by teacher)
15. Tape player
16. Filmstrip projector
17. Movie projector

MATERIAL TO BE LEARNED

There are certain things you need to know before you begin to service spark plugs. This part of the lesson deals with them. To learn this information, select one of the following activities:

_____1. Study the tape/filmstrip program, "Introduction to Spark Plugs."

_____2. Study the Assignment Sheet, "Spark Plug Composition, Components and Conditions."

_____3. Study pages 142-146 in your textbook.

_____4. Arrange for a group explanation which can be given by your teacher.

When you have completed one of the activities listed above, notify your teacher that you are ready for the posttest.

When you have taken and passed the posttest, continue with the next section in the module.

PRACTICE

This part of the module will now get you involved in servicing spark plugs. But first you will need a demonstration of how it is done. So, select one of these activities:

_____1. View the film, "Servicing Spark Plugs."

_____2. Study the procedure as explained and illustrated in pages 147-152 in your text.

_____3. Attend a demonstration given by your teacher or an advanced student.

When you have completed one of the above, obtain the Job Sheet, "Servicing Spark Plugs," and go to the work station.

Now practice the task by doing these steps. Each of these steps is further explained on your job sheet:

1. Remove spark plugs from engine.
2. Clean spark plugs. (There is a card with the cleaning machine which gives directions.)
3. Set spark plug gap.
4. Test spark plugs. (There is a card on the testing machine which gives directions for doing this.)
5. Install spark plugs.

CHECKPOINT

When you have practiced the procedure one or more times, you can have your work evaluated. Report now to your teacher who will evaluate your work according to these criteria:

1. Plugs are completely cleaned.
2. Gaps have been set to specifications.
3. Plugs have been properly replaced and torqued.

When your teacher has evaluated and approved your work, you may go on to the next module.

SAMPLE 3

TYPING PREPRINTED BUSINESS FORMS

INTRODUCTION

Office managers have found that certain office tasks are time consuming and repetitious. One of them is the recording of information that does not change. After studying certain office tasks, it was found that much information that has to be recorded for a particular office can be printed on a form because it is standard. Depending on the business, which may be medical, sales, purchasing, etc., the required information is determined and a suitable form is prepared. An example of information that stays the same is the address and telephone number of a business. Having a printed form also prevents the omission of important facts. Therefore, the preprinted business form serves as a memory aid as well as a time saver.

This module was designed to teach you how to type such preprinted business forms.

PERFORMANCE OBJECTIVE

When you have completed the study and practice required in this module, you will be expected to meet this objective.

Given preprinted business forms that require typing on lines, in boxes, after guide words, or in columns (such as purchase order, purchase requisition, invoice, acknowledgement, check, form letter, payroll time sheet, business contract, telegram, personnel form, or voucher) plus the necessary information for completing the forms, type the information onto the forms. All applicable information must be typed onto the forms in the appropriate spaces, and placement of copy must be consistent and evenly aligned, with all errors neatly corrected.

MATERIALS

You will need the following materials for this module.

- Typewriter, correction materials, and duplicated forms provided by your teacher.
- Your textbook or other materials dealing with typing preprinted business forms.

Your teacher will provide a pretest (if used) and the learning activity posttest.

If available and directed by the teacher, you will also use:

- Filmstrip, "Typing Preprinted Business Forms"
- Tape cassette, "Typing Preprinted Business Forms"
- Filmstrip projector
- Cassette tape player

INFORMATION LESSON

In order to type preprinted business forms you must know certain things about them. Among other things, you must know some of the common types of forms, how to type on lines, how to type inside boxes, how to fill in information after guide words, how to type columns of information or numbers, and how to type between lines. This lesson was designed to teach you those requirements.

LESSON DIRECTIONS

You will be asked to learn the information on preprinted business forms in one of the ways described below. Before you begin any one of them, your teacher might give you a short pretest. If so, you will be informed at this point.

- Your teacher might conduct a group-paced audiovisual lesson using a tape and filmstrips. This method will also be followed with the learning activity-posttest.

- You might be asked to complete a study assignment in class using your textbook or other study materials, followed by the learning activity-posttest. If you have been told to do this, your teacher will tell you what to study. Write the study references in these spaces:

_____

_____

- You might be told to study the audiovisual package on an individual basis to be followed with the learning activity-posttest.

- You might be asked to complete the lesson out of class. When you come to class you will then have a review and complete the learning activity-posttest. If you have been told to do this, your teacher will tell you what to study. Write the study references in these spaces:

_____

_____

LEARNING ACTIVITY-POSTTEST

When you have completed the information lesson in one of the ways described above, your teacher will give you the learning activity-posttest. Complete it and return it to your teacher for evaluation. When it has been approved by your teacher, you are ready for the practice in the next section.

APPLICATION

This section was designed to provide you with practice in applying what you have learned about typing preprinted business forms. Follow this general procedure:

1. Obtain appropriate supplies.
2. Make necessary typewriter adjustments.
   a. Set appropriate margins
   b. Adjust line space regulator
   c. Set appropriate tabs
3. Insert the form and align properly.
4. Type information onto the form.
5. Proofread carefully, correcting all errors, before removing copy from typewriter.

1. ACCOUNT CARDS

Ask your teacher for the duplicated account cards. Then type them as follows:

These preprinted business forms require that you type between lines. Remember that in typing between lines you must align the cards using the alignment scale on the card holder. Set the left margin so each item will begin at the same point (except the Account No. and the final Remarks line).

Use the following information to fill in the blanks on the cards:

You work for Smithers Wholesale Appliance Store and are responsible for filling out the customer billing cards. This applicance store has many credit customers and this week five more new accounts are being added to the file.

The last account number that was recorded was 278. Beginning with 279, type the names and other information on the cards in the order that they applied for credit.

On Monday, Mr. James C. Green applies for credit. His address is 76 West Windsor Avenue, White Stone, S.C. 29386; telephone 583-8879. Mr. Green will be billed on the 15th of each month and wishes to receive two copies of each bill instead of the usual one copy which Mr. Smithers mails.

On Tuesday, two new customers applied for credit. Mr. Arnold Gray Anderson came in at 10:00 a.m. and applied for a bimonthly billing schedule. Mr. Anderson's company will be doing a great deal of business with Smithers Wholesale. His business address is 1212 West Main Street, Spartanburg, S.C. 29301; telephone 576-9980.

Also on Tuesday, at 4:00 p.m., Mrs. Amelia G. Weathers applied for credit for the business in which she is a part owner. The credit was granted to Miles–Weathers Specialty Store located at 17½ Greenlawn Circle in Fernwood, S.C. 29388; telephone 786-9908. They prefer to be billed at the end of each month (Mr. Smithers uses the 28th of the month as the end-of-month billing date). Mrs. Weathers requests that the bill be sent to the store to her attention.

Mr. William B. Evers applied for credit on Thursday. His company address is: 497 Eden Boulevard, Spartanburg, S.C. 29303; telephone 585-2222. He wishes to be billed on the 15th of the month.

Mr. Allen Becker of Allentown Small Appliances came by on Saturday morning to apply for credit. The store address is 5656 North Windsor Avenue, Allentown, N.C. 27554; telephone 445-9975. He will be billed at the end of each month. The person in charge of paying accounts at the Allentown Small Appliances store is the manager, Mrs. Julia Marshall.

2. SCHEDULE OF COURSES

Obtain the form "Schedule of Courses" from your teacher. Then on a separate sheet of paper, write your personal schedule of courses for the 10th 11th, and 12th grades. When you have done that, type the form using your own personal data.

3. INVENTORY FORM

Obtain the inventory form from your teacher.

This preprinted business form is an inventory that has been prepared to make the task of listing equipment simpler.

For the purposes of this activity, you will inventory all the typewriters in your office procedures room or department (as specified by your instructor). The due date for this task will also be assigned by your instructor. Type your name on the "Submitted by" line.

SUBMIT THIS WORK FOR EVALUATION UPON COMPLETION.

EVALUATION

Now that you have had opportunity to practice typing preprinted business forms, it is time to be evaluated on your proficiency. Ask your teacher for the forms; then type the following assignments. When you have completed them, turn them in for evaluation.

1. PURCHASE ORDER/INVOICE

The top form is a purchase order. A purchase order is used by a business to order supplies or merchandise from another business. The purchase order will require that you type inside a boxed area, after guide words, and in columns.

Fill in the following information in the appropriate places:

Crossroads Printers are sending this purchase order to City Printing Supplies, Inc., 45889 Main Street, East, Yales, GA. 30089. The order number for Crossroads Printers is 7560, and the order is placed on the current date to be paid with a 2 percent discount if paid within 10 days, or net amount to be paid in 30 days (2/10, n/30). The order is to be shipped via UPS. Type your name as the Purchasing Agent.

Crossroads Printers is placing the following order:

2 bottles of Desensitizer No. 4-8894 for 700 series short run plates at $5.67 ea.

7 alignment guides No. 4-7765 at .75 ea.

8 bottles offset fountain concentrate - blue - No. 4-3365 at $1.57 per bottle.

1 ink dispensing gun No. 4-8890 at $3.79 ea.

The bottom form is an invoice. An invoice is mailed from the supplier to the buyer indicating what was purchased and how much the buyer owes on the account.

City Printing Supplies, Inc., has received the order from Crossroads Printers and filled the order. Using the information as provided above, type the invoice. The only change that is to be made is on the offset fountain concentrate - blue - entry. City Printing Supplies only had 6 bottles in stock. Therefore, the entry for this item will indicate that only 6 bottles are being delivered. Type an asterisk beside this entry and make a note at the bottom of the form indicating that the other 2 bottles are being backordered.

2. BILL OF LADING

A bill of lading is a form issued by a common carrier acknowledging receipt of goods that are to be shipped. A common carrier is a public transportation system, such as UPS (United Parcel Service), trains, buses, planes, etc.

The bill of lading will require that you type in a boxed area, on lines, and after guide words.

You will make one carbon copy of this form. When making a carbon copy of a form such as this you must be careful that the bottom copy is aligned perfectly with the one on the top. This requires practice and you may not accomplish this feat the very first time. You can align the two copies by holding them up to the light or placing them on a mimeoscope. Then, you must very carefully place the carbon sheet between them. Usually forms requiring carbon copies are attached at the top or at the bottom and the problem of alignment is solved. Your evaluation will be based on the accuracy of the top copy, but making the carbon copy will provide the experience you may need in aligning forms for other problems you will encounter.

The fill-in information for this problem relates to the purchase order and invoice you typed in the previous exercise.

The supplies are from: City Printing Supplies, Inc., 45889 Main Street, East, Yales, GA 30089 (use current date).

Consigned to and destination: Crossroads Printers, 298 E. Wood Street, Spartanburg, SC 29302; Order No. 7650; carrier - UPS; car initial and no. FTG897-90.

No. pkgs.	Desc.	Weight (= lbs.)
1	desensitizer and offset fountain concentrate	16
1	alignment guides	1
1	ink dispensing gun	2

Shipper: City Printing Supplies, Inc. (permanent address same as above)

Shipper's No.: 346496

When these assignments have been approved by your instructor, you are ready for the next module.

SAMPLE 4

ELECTRONICS
MODULE EC-17C
MEASURING THE OUTPUT POWER [1]

INTRODUCTION

One of the tasks you must be able to do as a two-way radio communication technician is measure the output power. This measurement must be performed in accordance with certain FCC Rules and Regulations. Although this module relates exclusively to the measurement of output power in CB transceivers using one particular piece of test equipment, the general techniques and procedures used can apply to any two-way radio equipment.

PERFORMANCE OBJECTIVE

When you have completed the study of related materials in this module, have had the procedures and techniques demonstrated to you by the instructor, and have practiced the techniques and procedures, you will be expected to meet this objective:

Provided an operating CB Transceiver, power source, Sencore CB-42 Analyzer (and related service manual), and the necessary cable, measure the RF output power per FCC Rules and Regulations.

MATERIALS

You will need your textbook, manufacturer's instructions, appropriate FCC Rules and Regulations, an operating CB transceiver, the CB-42 Analyzer, connector cable, and necessary power sources for completion of this module. Your instructor will provide you with the pretest (if used) and the learning activity-posttest. If available and directed by the instructor, you will also use:

Flip chart, "Operating the CB-42 Analyzer"
Cassette tape, "Operating the CB-42 Analyzer"
Cassette tape player
Information sheets

[1]Used by permission of the authors, Harold Coomes, John M. Patterson State Technical College; Charles Gilmer, Opelika State Technical College; Jim Myers, Wallace State Community College, Technical Division.

INFORMATION LESSON

In order to perform the task of measuring the output power of the CB transceiver, you must know the procedures for doing so in accordance with the FCC Rules and Regulations for such measurements. This lesson was designed to teach them.

LESSON DIRECTIONS

You will be asked to learn the information on measuring output power in one or more of the ways described below. Before you begin using any of the methods of learning, your instructor will give you a short pretest.

- Your instructor may conduct the lesson in a regular classroom explanation and demonstration. Upon conclusion of this phase, you will perform several practice measurements of power. After the practice measurements, you will be given the learning activity-posttest.

- Your instructor may conduct a group-paced audiovisual lesson using transparencies, the chalkboard, your textbook, information sheets, flip charts, and other materials. Following a demonstration, you will then have an opportunity to practice measurements. This lesson will also be followed by the learning activity-posttest.

- You may be asked to complete a study assignment in class, using your textbook, information sheets, and other materials. Without a prior demonstration, you may, under close supervision of the instructor, be required to perform a practice measurement. After an opportunity for additional practice measurements, this lesson will be followed by the learning activity-posttest. Write the study reference from your textbook, and the information sheet numbers in the spaces below.

_____

_____

- You might be asked to study the audiovisual package on an individual basis. Advanced students may assist you in practice measurements.

- You may be asked to complete the lesson out of class except for the actual practice measurements and the posttest. If you have been told to study the lesson in such a manner, your instructor will advise you regarding the material to study. Write the study references in the spaces below.

_____

_____

When you have been told to use one of the self-study methods previously described, you should begin at this point. In either case that is, whether you have been given an assignment on the basis of self-study, or a formal classroom work assignment, upon completion of this phase of study your instructor will then give you a written exercise. Ask your instructor for the exercise.

APPLICATION

This section is intended to be a guide for you in applying what you have learned about measuring output power. Follow the general procedure outlined below.

1. Assemble the necessary equipment on a workbench.
2. Apply power to the CB transceiver and the CB-42.
3. Adjust the "READOUT SELECTOR" on the CB-42 to "RF WATTS."
4. Connect the transceiver antenna jack to "ALL 50 LOAD TESTS" jack on the CB-42 using the appropriate cable.
5. Place the microphone in the dynamic microphone test package (to prevent any modulation).
6. Key the transmitter.
7. Read power output on digital readout of the CB-42.

Exercise 1

Measure the output power from the CB transceiver using the above procedure. Measure the DC input power to the final amplifier of the CB transceiver. If necessary, adjust the power supply voltage to the CB transceiver in accordance with the manufacturer's instructions. Determine if operating power is in accordance with FCC Rules and Regulations.

Exercise 2

As an optional exercise the instructor may have you make additional measurements on other CB transceivers. In such cases you must again follow the same general procedures previously outlined. You will also complete a worksheet related to procedures.

EVALUATION

As your instructor observes, you will measure the output power of a CB transceiver. All necessary power and cable connections must be made, power supply voltages adjusted properly, text equipment adjusted properly and in the proper sequence. The DC input power to the final amplifier must be made and adjusted in accordance with FCC Rules and Regulations.

When your instructor has observed and approved your measurements and techniques, you will have completed this module.

CHAPTER 6

DEVELOPING TEACHER GUIDES

The student guides explained and illustrated in the previous chapter were designed to guide the students in the necessary learning experiences in order to meet the objectives of each module. But what is the teacher expected to do? The answer is: the teacher will be expected to guide the learning activities. This guidance will be easier to provide if a teaching guide is prepared. This chapter deals with such guides. It presents the basic functional components of the teacher guide and then offers some examples.

BASIC COMPONENTS OF TEACHING GUIDES

In conventional instruction the teacher usually follows lesson plans. But with individualized modules, each student has individual lesson plans, the learning activity guides explained in the previous chapter. The teacher, however, is concerned with monitoring the lesson as manager, facilitator, motivator and evaluator. To help carry out those functions, you should prepare a teaching guide for managing and conducting the instruction.

Before writing or obtaining the instructor guide you should be aware of the purposes it serves. Basically, it serves these purposes.

- It provides an introduction to the module from the teacher's viewpoint.
- It should state the objectives.
- It should provide a listing of the materials so that you can insure preparation of the students.
- It should provide direction for the how-to-conduct-it type administration.
- As a minimum, it should include keys to the pre and posttests and directions for evaluation.

To serve those purposes, the teaching guide (also called teacher's manual, instructor guide, and other terms) usually has the following functional components.

INTRODUCTION

Designed especially for teachers other than those who developed the module, this section tells what the module is about. It may identify the occupational area, the course, and the task. In some cases, it may mention any prerequisities and explain any limitations such as what the module does NOT include.

The primary purpose of the introduction is to tell the teacher very briefly what the module is about.

Here is an example of an introduction. Note that it also explains the levels of achievement expected in the module.

INTRODUCTION

This module, designed to develop student proficiency in typing justified right margins, includes three levels of activity. The first level is an information lesson dealing with what students must know in order to do the task. It includes an optional pretest and a learning activity-posttest. The second is a practice activity in which students can apply what they have learned in the first. Performance for formal evaluation makes up the third level of activity. As will be explained later, there are five options for teaching the module.

OBJECTIVE

The teacher's guide should include as a minimum the performance objectives as illustrated in the following example. It may also contain the enabling objectives.

PERFORMANCE OBJECTIVES

Given edited, rough-drafted copy and other required supplies, type the copy with a justified right margin. The right margin must be exactly justified within the designated length of line, and all errors must be neatly corrected.

MATERIALS/EQUIPMENT

In order to conduct the module, the teacher must make sure that all learning resources are available. A listing of all such items, therefore, will serve as a reminder for what is needed as illustrated in the following example.

MATERIALS

In order to complete this module, the students must have typewriters, correction supplies and textbooks or other study materials.

You will need to reproduce copies of pretest (if you elect to use it) and the learning activity-posttest.

For the audiovisual options you will need:

Filmstrip "Justifying the Right Margin"
Cassette tape "Justifying the Right Margin"
Filmstrip projector
Cassette tape player

DIRECTIONS

This part of the teaching guide is designed to provide step-by-step directions for what to do. Similar to a lesson plan, it tells what the teacher is expected to do. Specifically, it may tell the teacher how to prepare for the module, state what items are to be reproduced, when to evaluate, when to give pre and posttests, and it may also suggest different teaching options. The following example gives the general directions and the specific directions for five options. (Student would be aware of the same options).

DIRECTIONS

This section contains the general directions which apply to all teaching options and the specific directions for each option.

GENERAL DIRECTIONS

1. Read and become familiar with the student's manual.
2. Read and become familiar with the teacher's manual.
3. Reproduce sufficient copies of the learning activity-posttest.
4. Reproduce sufficient copies of the pretest if you elect to use it.
5. Make sure the necessary materials are available and in place.

OPTION 1 - TEACHER-PRESENTED INFORMATION LESSON FOLLOWED BY SELF-PACED PRACTICE AND PERFORMANCE

1. Administer the pretest if you have elected to use it.
2. Using transparencies or other aids, explain the procedures for justifying right margins.
3. Direct students to complete the learning activity-posttest; evaluate using key from attachments.
4. Evaluate the exercises typed in APPLICATION section, using checklist from attachments.
5. Evaluate assignments typed in EVALUATION section, using checklist from attachments.

OPTION 2 - GROUP-PACED AUDIOVISUAL INFORMATION LESSON FOLLOWED BY SELF-PACED PRACTICE AND PERFORMANCE

1. Administer the pretest if desired.
2. Set up cassette player and filmstrip projector.
3. Introduce the lesson and explain what students are to do.
4. Present the audiovisual program. NOTE: In lieu of the tape, you may read from the scrip.
5. Administer the learning activity-posttest and evaluate using key from attachments.
6. Evaluate the exercises typed in the APPLICATION section using checklist from attachments.
7. Evaluate the assignments typed in the EVALUATION section using checklist from attachments.

OPTION 3 - COMPLETE SELF-STUDY

1. Make sure each student has the necessary study references.
2. Inform students of study references and instruct them to enter those references in student manual.
3. Give the pretest if you have decided to use it.
4. Direct students to begin the study, following directions in the student's manual.
5. As each student completes the study, administer the learning activity-posttest and evaluate, using key from attachments.
6. Evaluate the exercises typed in APPLICATION section, using checklist from attachments.
7. Evaluate the assignments in EVALUATION section, using the checklist from attachments.

OPTION 4 - INDIVIDUAL AUDIOVISUAL LESSON FOLLOWED BY SELF-PACED PRACTICE AND PERFORMANCE

1. Make sure each student has the student's manual.
2. Give the pretest if you have decided to use it.
3. Show the students how to operate the cassette player and filmstrip projector if necessary.
4. Administer the learning activity-posttest upon completion of the audiovisual program; evaluate, using key from attachments.
5. Direct students to continue with the module.
6. Evaluate the exercises typed in the PREPARATION section, using checklist from attachments.

OPTION 5 - OUTSIDE STUDY ASSIGNMENT, IN-CLASS REVIEW, SELF-PACED PRACTICE AND PERFORMANCE

1. Give the pretest if you have decided to use it. (Give before the study assignments are made.)
2. Inform students of references to study; instruct them to enter references in student manual.
3. When class begins, review the principles of spirit duplicating and correcting, using transparencies or other aids.
4. Administer and evaluate the learning activity-posttest, using key from the attachments.
5. Direct students to continue with the module.
6. Evaluate the exercises typed in APPLICATION section, using checklist from attachments.
7. Evaluate the assignments typed in the EVALUATION section, using checklist from the attachments.

OTHER ITEMS

Attached to the teachers guide may be other items such as pre and posttests, keys to those tests, and evaluation aids.

SAMPLE TEACHER GUIDES

The following are four examples of teacher guides designed for the learning activity guides included in the previous chapter.

SAMPLE 1

PREPARE CHECKS FOR PAYMENT

INTRODUCTION

This module was intended to develop proficiency in check writing. It includes the basic terms pertaining to checks, the parts of the check and stub, and the procedures and practice for writing checks. Designed to accommodate students who have prior knowledge and experience, it includes a pretest of the knowledges and a proficiency test for the task. The learning activities contained in the module are all self-paced.

OBJECTIVES

PERFORMANCE OBJECTIVE:

Provided a blank check for student use and information concerning date, payee, drawer, amount, previous deposits and balance, and check writing guidelines, prepare the check and stub without error.

ENABLING OBJECTIVES:

1. Given a list of terms pertaining to checks, write the correct definition for each term.
2. Given a completed sample check, label each part of the check and stub. Label all parts correctly.
3. Given information on required check payment and blank check stub, fill in the stub without error.
4. Provided information on payment by check and sample check, write the check without error.

MATERIALS

The materials required for this module are:

1. Student guide
2. Pre/post test
3. Textbook, BANKING PROCEDURES
4. Package of student materials, "Prepare Checks for Payment"
5. Sample checks for practice and evaluated performance

DIRECTIONS

1. Review the student's guide to become familiar with it.
2. Review the teacher's guide to become familiar with it.

3. Make sure that each student has a student guide, textbook, and package of student materials.
4. Reproduce sufficient copies for the pre/post test.
5. Reproduce sufficient copies of the blank checks for student use.
6. Administer the pretest to each student who desires to take it. Those who score 90% may bypass the information lesson.
7. Administer the proficiency test to each student who desires it after passing the pretest. Refer students to EVALUATION EXERCISE section of student guide for performance. Provide the required checks. Evaluate according to these criteria:

   a. Check stub must contain each of the following correctly written and computed.

      (1) Balance brought torward
      (2) Record of deposits
      (3) Total of previous balance and deposits
      (4) Amount of check
      (5) New balance

   b. Check must contain each of the following correctly written:

      (1) Check number
      (2) Date
      (3) Payee's name
      (4) Amount in figures
      (5) Amount in words

8. Administer the pre/posttest to each student upon completion of information lesson. Student must score at least 90% according to key. Assign remedial or restudy to any student who scores less.
9. Evaluate each student's final project as directed in EVALUATION EXERCISE section of student guide. Use same criteria as in item 7 above.

SAMPLE 2

SERVICING SPARK PLUGS

This module was designed to provide the basic training in servicing spark plugs. Designed to teach both the knowledges and skills, it contains an information lesson, a practice session and provision for formal evaluation.

Pretests and proficiency tests are provided to meet the needs of students having prior knowledge or experience.

The information lesson includes four options by which students may learn the information. Likewise, the practice section contains three options by which students can observe the procedures.

OBJECTIVES

PERFORMANCE OBJECTIVE:

Given an automobile needing spark plug service, and access to the appropriate tools, equipment and service manual, clean, gap, and test the spark plugs and place them back into the automobile according to the manufacturer's specifications and procedures.

ENABLING OBJECTIVES:

1. Identify the basic composition of spark plugs.
2. Identify spark plug components.
3. Identify spark plug conditions.
4. Remove spark plugs.
5. Clean spark plugs.
6. Set spark plug gaps.
7. Test spark plugs.
8. Install spark plugs.

MATERIALS/EQUIPMENT

Each student must have access to the following:

1. Assigned textbook
2. Tape/filmstrip program, "Introduction to Spark Plugs" (Optional)
3. Assignment sheet, "Spark Plug Composition, Components and Conditions"
4. Automotive service manual

5. Job sheet, "Servicing Spark Plugs"
6. Film "Servicing Spark Plugs"
7. Engine with spark plugs installed
8. Spark plug wrench
9. Spark plug tester (with direction card)
10. Spark plug cleaning machine (with direction card)
11. Feeler gauge
12. Assorted spark plugs (coded for pre and posttests)
13. Pretest
14. Posttest
15. Tape player
16. Filmstrip projector
17. Movie projector

DIRECTIONS

A. PREPARATION

1. Read the teacher guide and become familiar with it.
2. Read the student guide and become familiar with it.
3. Make sure all materials listed in previous section are available for each student.

B. PRETEST/PROFICIENCY TEST

1. Administer the pretest to any student who wishes to take it. Students who score at least 90% may bypass the information lesson and continue with the practice or take the proficiency test.
2. Administer the proficiency test to any student who scores 90% or more on pretest. Evaluate in accordance with checklist in attachments. Students who complete all items on checklist may go on to next module.

C. GENERAL ADMINISTRATION

1. Make arrangements for the group explanation option from the information lesson for students who choose that option.
2. Make arrangements for the group demonstration option from the PRACTICE section for students who choose that option.
3. Administer posttest to each student upon completion of the information lesson. Score with key in attachments. Assign remedial to students who score less than 90%.
4. Evaluate each student's task performance, using the checklist in the attachments.

ATTACHMENTS

The following are included as part of this teacher guide.

1. Pre/posttest.
2. Key to pre/posttest.
3. Evaluation checklist.

PRE/POSTTEST

STUDENT _____

1. The purposes of porcelain in a spark plug are_____ and _____.
2. Steel is used for the_____ and _____ of a spark plug.
3. Attached is a drawing of a spark plug. The parts are labeled A through K. Write the letter of each part with the name of the part below.

   _____ 1. Terminal
   _____ 2. Seal
   _____ 3. Insulator
   _____ 4. Rib
   _____ 5. Flats
   _____ 6. Shell
   _____ 8. Gasket seal
   _____ 7. Center electrode
   _____ 9. Threads
   _____ 10. Side electrode
   _____ 11. Gap

4. On the bench before you is an assortment of plugs labeled A through N. Inspect each plug and write its label in the blank below which describes its condition.

   _____ 1. Oil fouling
   _____ 2. Gas fouling
   _____ 3. Burned or overheated
   _____ 4. Normal condition
   _____ 5. Carbon fouling
   _____ 6. Silicone deposit
   _____ 7. Splashed fouling

When you have completed the test, give it to your teacher for grading.

GRADE:_____

KEY TO PRE/POSTTEST

1. insulation, heat dissipation
2. center part, base
3. C 1. Terminal
   G 2. Seal
   J 3. Insulator
   K 4. Rib
   I 5. Flats
   A 6. Shell
   E 7. Gasket seal
   H 8. Center electrode
   F 9. Threads
   D 10. Side electrode
   B 11. Gap
4. J, B 1. Oil fouling
   L, E 2. Gas fouling
   N, G 3. Burned or overheated
   H, A 4. Normal condition
   M, F 5. Carbon fouling
   I, D 6. Silicone deposit
   K, C 7. Splashed fouling

EVALUATION CHECKLIST

Servicing Spark Plugs

1. Removed plugs without damage to wires, plugs or gasket. NO____ YES____
2. Cleaned plugs according to directions on cleaning machine. NO____ YES____
3. Set spark plug gaps according to specifications. NO____ YES____
4. Obtained accurate efficiency reading. NO____ YES____
5. Installed plug with correct torque. NO____ YES____
6. Replaced plug wires in correct order. NO____ YES____

SAMPLE 3

TYPING PREPRINTED BUSINESS FORMS

INTRODUCTION

This module, designed to develop student proficiency in typing preprinted business forms, includes three levels of activity. The first level is an information lesson dealing with what students should know in order to type preprinted business forms. It includes an optional pretest and a learning activity-posttest. The second is a practice activity in which students can apply what they have learned in the first activity. Performance for formal evaluation makes up the third level of activity. As will be explained later, there are five options for teaching the module.

PERFORMANCE OBJECTIVE

Given preprinted business forms that require typing on lines, in boxes, after guide words, or in columns (such as purchase order, purchase requisition, invoice acknowledgement, check, for letter, payroll time sheet, business contract, telegram, personnel form, or voucher), plus the necessary information for completing the forms, type the information onto the forms. All applicable information must be typed onto the forms in the appropriate spaces, and placement of copy must be consistent and evenly aligned with all errors neatly corrected.

MATERIALS

In order to complete this module, the students must have typewriters, correction materials and textbooks or other study materials on typing preprinted business forms.

You will need to reproduce copies of the pretest (if you elect to use it), learning activity-posttest, and the forms included in the attachments.

For the audiovisual option you will need:

Filmstrip "Typing Preprinted Business Forms"
Tape Cassette "Typing Preprinted Business Forms"
Filmstrip projector
Cassette tape player

DIRECTIONS

This section contains the general directions which apply to all options and the specific directions for each option.

GENERAL DIRECTIONS

1. Read and become familiar with the student's manual.
2. Read and become familiar with the teacher's manual.
3. Reproduce sufficient copies of the learning activity-posttest.
4. Reproduce sufficient copies of the pretest if you elect to use it.
5. Reproduce sufficient copies of the business forms.
6. Make sure the necessary materials are available and in place.

OPTION 1 - TEACHER-PRESENTED INFORMATION LESSON FOLLOWED BY SELF-PACED PRACTICE AND PERFORMANCE

1. Administer the pretest if you have elected to use it.
2. Using transparentcies or other aids, explain the procedures for typing preprinted business forms.
3. Direct students to complete the learning activity-posttest; evaluate, using key from attachments.
4. Evaluate forms typed is APPLICATION, using checklists from attachments.
5. Evaluate the forms typed in EVALUATION section, using checklists from attachments.

OPTION 2 - GROUP-PACED AUDIOVISUAL INFORMATION LESSON FOLLOWED BY SELF-PACED PRACTICE AND PERFORMANCE

1. Administer the pretest if desired.
2. Set up cassette player and filmstrip projector.
3. Introduce the lesson and explain what students are to do.
4. Present the audiovisual program. NOTE: In lieu of the tape, you may read from the scrip.
5. Administer the learning activity-posttest and evaluate, using key from attachments.
6. Evaluate the forms typed in the APPLICATION section, using checklists.
7. Evaluate the forms typed in the EVALUATION section, using checklists from attachments.

OPTION 3 - COMPLETE SELF-STUDY

1. Make sure each student has the necessary study references.
2. Inform students of study references and instruct them to enter those references in student manual.
3. Give the pretest if you have decided to use it.
4. Direct students to begin the study, following directions in the student's manual.
5. As each student completes the study, administer the learning activity-posttest and evaluate, using key from attachments.

6. Evaluate the forms typed in APPLICATION section, using checklists from attachments.
7. Evaluate the forms typed in EVALUATION section, using the checklists from attachments.

OPTION 4 - INDIVIDUAL AUDIOVISUAL LESSON FOLLOWED BY SELF-PACED PRACTICE AND PERFORMANCE

1. Make sure each student has the student's manual.
2. Give the pretest if you have decided to use it.
3. Show the students how to operate the cassette player and filmstrip projector if necessary.
4. Administer the learning activity-posttest upon completion of the audiovisual program; evaluate, using key from attachments.
5. Direct students to continue with this module.
6. Evaluate the forms typed in the APPLICATION section, using checklists from attachments.
7. Evaluate the forms typed in EVALUATION section, using checklists from attachments.

OPTION 5 - OUTSIDE STUDY ASSIGNMENT, IN-CLASS REVIEW, SELF-PACED PRACTICE AND PERFORMANCE

1. Give the pretest if you have decided to use it.
2. Inform students of reference to study; instruct them to enter references in student manual.
3. When class begins, review the procedures for typing preprinted business forms, using transparencies or other aids.
4. Administer and evaluate the learning activity-posttest using key from the attachments.
5. Direct students to continue with the module.
6. Evaluate the forms typed in APPLICATION section, using checklists from attachments.
7. Evaluate the forms typed in the EVALUATION section, using checklists from the attachments.

ATTACHMENTS

The following attachments are included:

1. Pretest
2. Learning Activity-Posttest
3. Key to above
4. Forms to be reproduced (Bill of Lading form not included. Must be obtained locally.)
5. Instructor checklists
6. Narrative for "Typing Preprinted Business Forms"

Name_____

TYPING PREPRINTED BUSINESS FORMS

PRETEST

Directions: Fold this sheet lengthwise at the fold line.
Respond to the items by writing your answer in the blank under the Answer column.
When you have finished, check your answers by folding out the Correct Answer Column.

QUESTIONS	YOUR ANSWER	CORRECT ANSWER
1. Can you type?	1. Yes-No	
2. Can you make acceptable corrections on typed copy?	2. Yes-No	
3. Do you know how to use the tab clear key, the tab set, and the tab key on your typewriter?	3. Yes-No	
4. Can you find and operate the variable line spacer?	4. Yes-No	
5. Can you find and operate the ratchet release lever?	5. Yes-No	
If the answer to any of the above questions was No, check with your instructor before you continue with the pretest. If you answered YES to all the above questions, continue with this pretest.		
6. Preprinted forms save the typist time in preparing reports, gathering data, recording information, and other routine office tasks.	6. Yes-False	True
7. Information is printed on preprinted forms that remains the same, such as telephone numbers, addresses, etc.	7. True-False	True
8. When typing inside printed boxes, the information must be exactly centered.	8. True-False	False

Fold Here

QUESTIONS	YOUR ANSWER	CORRECT ANSWER
9. When typing fill-in information after guide words use the __ __ __ on your typewriter.	9. _____ _____ _____	Variable line spacer
10. You should leave_____blank spaces between the guide word and the fill-in information.	10. _____	two
11. Visually center each column on a purchase order except the_____column. This column begins two spaces to the right of the ruled line.	11. _____	description
12. When you must type between two lines, you will use the__ __ __ to align the typed copy between lines.	12. _____ _____ _____	variable line spacer
13. When typing on a printed line, you must be careful to type (on, below, above) the printed line.	13. _____	above
14. Before typing on any printed form, you must be sure that the form is inserted straight. If it is not straight you must use the __ __ lever on the typewriter to release the paper before it can be straightened.	14. _____ _____	ratchet release
15. The printed line on the form must be aligned with the line on the _____ _____of the typewriter	15. _____	card holder

Fold Here

Name_____

Evaluation_____

TYPING PREPRINTED BUSINESS FORMS

LEARNING ACTIVITY-POSTTEST

Directions: Respond to the items by writing your answers in the blanks under the Answer column. When you have finished, turn in this sheet to your instructor for evaluation.

Questions	Your Answer	Acceptable	Not Acceptable
1. The typist can save ____ by using preprinted forms to prepare reports, gather data, record information, and prepare other routine office tasks.	1._____		
2. What is an example of the type of information that appears on a preprinted form that does not change?	2._____		
3. Instead of centering information within a box on a preprinted form, the typist can save time by typing the information _____ line spaces down from the top of the box and leaving _____ spaces at the left edge.	3._____		
4. Printed words on a form which serve as a guide to the placement of fill-in information are called_____.	4._____		
5. The_____ _____ _____ on your platen is used to align fill-in information with guide words.	5._____		
6. The_____ _____ on the card holder is used to align the bottom of the guide words with the information that is to be filled in.	6._____		
7. There should be_____ blank spaces between guide words and fill-in information.	7._____		
The following questions relate to forms such as invoices, purchase orders, etc., in which lines are printed horizontally and vertically and information is to be typed within these boundaries.			
8. A horizontal line which serves to separate the body of a form from the typed copy should be followed by a (SS, DS, TS).	8._____		
9. Those columns on a form which are to be visually centered require that a tab stop be set. The tab setting is determined using the (longest, shortest) line in a column.	9._____		
10. The description column is not centered, but the tab stop is set_____ spaces from the ruled line.	10._____		

Questions	Your Answer	Acceptable	Not Acceptable
11. When you type information that is set up in columns, you must type (across, down) the columns.	11._____		
12. When fill-in information requires more than one line per item, the second and succeeding lines are indented_____spaces.	12._____		
13. Amount columns which will end in a total amount are_____ before typing the final total.	13._____		
14. After the last amount in a total column is underscored, you should_____space before typing the final total.	14._____		
15. The_____ _____ _____ is used to align typed information between two printed lines.	15._____		
16. The fill-in information typed on a printed line should be (above, on, below) the printed line.	16._____		
17. Extended characters, such as the "y," the "p," and the "g" should rest (above, on, below) the printed lines.	17._____		
18. The_____ _____ on the card holder is used to judge the alignment of a printed form before typing on or between lines or after guide words.	18._____		
19. Once paper has been inserted into the typewriter, you must use the_____ _____lever before the paper can be moved for alignment.	19._____		
20. Remember to_____the completed form before removing it from the typewriter.	20._____		

Instructor's Key
TYPING PREPRINTED BUSINESS FORMS
LEARNING ACTIVITY-POSTTEST

1. time
2. this answer may vary: telephone number, address, column headings, etc.
3. two, two
4. guide words
5. variable line spacer
6. alignment scale
7. two
8. DS
9. longest
10. two
11. across
12. three
13. underscored
14. double
15. variable line spacer
16. above
17. above
18. alignment scale
19. paper release
20. proofread

PREPRINTED BUSINESS FORMS

ACCOUNT CARDS

DIRECTIONS: **Use a pair of scissors or a paper cutter to separate these cards. Each one is to be typed individually.**

Account No._____

Name: _____

Address: _____

_____

Telephone: _____

Billing Date: _____

Remarks: _____

_____

Account No._____

Name: _____

Address: _____

_____

Telephone: _____

Billing Date: _____

Remarks: _____

_____

Account No._____

Name: _____

Address: _____

_____

Telephone: _____

Billing Date: _____

Remarks: _____

_____

Account No._____

Name: _____

Address: _____

_____

Telephone: _____

Billing Date: _____

Remarks: _____

_____

Account No._____

Name: _____

Address: _____

_____

Telephone: _____

Billing Date: _____

Remarks: _____

_____

Last First MI

Name _____

Address _____

Phone No. _____

SCHEDULE OF COURSES

10th Grade	11th Grade	12th Grade
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

ACTIVITIES: _____

_____

HONORS AND AWARDS: _____

_____

INVENTORY

Please inventory all equipment that is assigned to your room or department. This form is due to be returned on or before_____

_____

Submitted by

Name of Equipment List each piece separately	Manufacturer's Name	Serial No.

REPRINTED BUSINESS FORMS

Purchase Order

CROSSROADS PRINTERS 298 E. Wood St.
Anytown, US 00010

Order No.

Date

TO:

Terms

Shipped Via

Quantity	Cat. No.	Description	Price	Total

By_____

Purchasing Agent

PREPRINTED BUSINESS FORMS

INVOICE

CITY PRINTING SUPPLIES, INC.

45889 Main Street, East
Yales, GA 30089

Date

Our Order No.

Cust. Order No.

Shipped Via

Sold
to

Terms

Quantity	Description	Unit Price	Total

Instructor's Evaluation Guide
For
TYPING PREPRINTED BUSINESS FORMS

Name_____

PERFORMANCE CRITIQUE:

Excellent. . . . . _____
Good. . . . . _____
Fair. . . . . _____
Needs Improvement. . . . . _____

ACTIVITY Inventory	Evaluation	
	Acceptable	Unacceptable
1. Counted the correct number of typewriters in your room (as specified by the instructor).		
2. Typed student name on "Submitted by" line.		
3. Made necessary typewriter adjustments. a. Set appropriate margins. b. Adjusted line space regulator. c. Set appropriate tabs.		
4. Inserted the form and aligned it properly.		
5. Typed information onto the form correctly.		
6. Proofread carefully and corrected all errors before removing form from typewriter.		
7. Submitted the inventory form on or before the due date.		

Name_____

Instructor's Evaluation Guide
For
TYPING PREPRINTED BUSINESS FORMS

PERFORMANCE CRITIQUE:

Excellent. . . . . _____
Good. . . . . _____
Fair. . . . . _____
Needs Improvement. . . . . _____

ACTIVITY — Bill of Lading	Evaluation	
	Acceptable	Unacceptable
1. Inserted bill of lading form with carbon paper and duplicate into the typewriter correctly.		
2. Aligned original, carbon, and duplicate properly in the typewriter.		
3. Obtained all necessary information from the purchase order and invoice.		
4. Typed the current date on the form with correct alignment.		
5. Typed destination and consignment address correctly.		
6. Typed order number correctly.		
7. Typed delivering carrier correctly.		
8. Typed car initial and number correctly.		
9. Typed package number, description and weight information accurately with correct placement.		
10. Typed shipper and shipper number correctly with accurate alignment.		
11. Typed student name as purchasing agent.		
12. Proofread carefully and corrected all errors before removing form from typewriter.		

NARRATION

Typing Preprinted Business Forms

NOTE: Numbers identify the frames in the filmstrip.

1. Title
2. Credit
3. Preprinted business forms aid the typist in preparing reports, gathering data, recording information, and many other routine office tasks. Any information which remains the same may be permanently printed on these forms.
4. The name, the address, and the phone number of the business are examples of information that remains the same. Having these items printed on each form saves the typist production time.
5. Printed business forms present some unusual typing problems. Depending on the format of the printed business form, you may find it necessary to: type on lines...
6. Type inside boxes...
7. Fill in information after guide words...
8. Type columns of information or numbers...
9. or type between two lines.
10. The filmstrip in this series will help you learn how to type information when confronted with any of these problems on printed forms. First, let's look at a purchase order.
11. This particular form lends itself to solving several problems previously mentioned. Notice that you will have to (1) type inside a boxed area, (2) fill in information after guide words, and (3) set tabs to type columns of information. (Narrator: say numbers).
12. The address is to be typed after the word "To" in the boxed area. Inside boxed areas, leave at least one blank line at the top of the box and leave two blank spaces at the left edge of the box.
13. To the right of the form, you see guide words which will require that information be typed in line with printed words.
14. Using the variable line spacer knob on your platen, align the bottom of the guide word with the alignment scale on your typewriter. Leave two blank spaces between the guide words and the fill-in information.
15. On this purchase order, there are four columns of information to be filled in. Leave at least one blank line below the printed line which separates the columnar headings from the fill-in area. This will require that you double space below the line.
16. All columns, except the description column, are to be visually centered between the ruled lines according to the longest line in each column. Set an appropriate tab for each column.
17. The description column tab is set two spaces from the ruled line.
18. All columns are filled in by typing across the page--never type the information in rows down the page. Use the tab key to arrive at the tab stop for each column.

19. The items in the body of a form are usually single spaced. Double spacing may be used if there are only 1-3 lines on a form. When the fill-in information requires more than one line space, the second and succeeding lines are indented three spaces.
20. Any column ending in a total is underscored under the last amount. Then, double space and type the total amount.
21. A bill of lading is an example of a form requiring that you type between two lines. Use the variable line spacer to align the typed information between the two printed lines.
22. The typed information should be slightly above and slightly below the printed lines. This placement makes reading easy. The bottom of extended characters, such as the "y," "g," and "p," should rest above the printed line.
23. This form also requires typing on lines. Use the variable line spacer to align the typed information slightly above the printed line.
24. You must check the form when typing on lines or between two lines to be sure that your paper is inserted correctly. Straighten the form in the typewriter using one of the printed lines as a guide. Align the printed line with the alignment scale on the card holder.
25. Proofread the form before removing it from the typewriter. When numerical information has been typed on the form check carefully to see that the numbers have been typed accurately. It is also wise to double check any computations, such as addition and subtraction, for accuracy.

SAMPLE 4

ELECTRONICS
MODULE EC-17C
MEASURING THE OUTPUT POWER[1]

INTRODUCTION

This module is designed to develop student proficiency in measuring the output power of a CB transceiver in accordance with FCC Rules and Regulations. Three levels of activity are included: an information lesson dealing with those prerequisites for performing the tasks which includes a pretest as well as a written exercise; practice activities in which students are called on to apply what they have learned in the first level of activity; and performance for a formal evaluation. Five options for teaching the module are suggested.

PERFORMANCE OBJECTIVE

Provided an operating CB transceiver, power source, Sencore CB-42 Analyzer (and related service manual), and the necessary cable, measure the RF output power per FCC Rules and Regulations.

MATERIALS

In order to complete this module, the students must have textbooks, and/or information sheets, service manuals for the CB transceiver and the CB-42 Analyzer. At least one CB transceiver and service manual is required; however, preferably there should be at least two additional units available for student use. One CB-42 Analyzer should be adequate for a class of up to 25 students. (Other power measuring equipment may be substituted for the CB-42 with appropriate minor changes in the general procedures outlined in the "APPLICATIONS" section of the student manual.)

You will need to reproduce copies of the pretest, the exercise sheet (EXERCISE EC-17C), the front panel layout sheet, and the measurement sequence worksheet.

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[1]Used by permission of the authors: Harold Coomes, John M. Patterson State Technical College; Charles Gilmer, Opelika State Technical College; Jim Myers, Wallace State Community College, Technical Division.

For the audiovisual options you will need:

Transparencies made from the CB-42 flip charts which accompany the CB-42

The audio cassette "CB-42 FAMILIARIZATION TAPE" which accompanies the CB-42

The flip charts which accompany the CB-42

An audio cassette tape player

DIRECTIONS

This section contains the general directions which apply to all options and the specific directions for each option.

GENERAL DIRECTIONS

1. Read and become familiar with the student's manual.
2. Read and become familiar with the teacher's manual.
3. Reproduce sufficient copies of the pretest.
4. Reproduce sufficient copies of the exercise.
5. Reproduce sufficient copies of the front panel layout (contained in the flip chart accomp accompanying the CB-42).
6. Reproduce sufficient copies of the measurement sequence worksheet.
7. Ascertain that the necessary materials are available and in place.

REMINDER

Emphasis should be placed on the fact that according to FCC Rules and Regulations, legal power measurements of CB transmitters may be conducted ONLY BY HOLDERS OF SECOND CLASS RADIO-TELEPHONE OPERATOR'S LICENSES (or higher grade).

OPTION 1

INSTRUCTOR-PRESENTED INFORMATION LESSON CONCLUDED BY CLASSROOM DEMONSTRATION BY THE INSTRUCTOR. THIS WILL BE FOLLOWED BY SELF-PACED PRACTICE ON THE PART OF THE STUDENT FOLLOWED BY EVALUATION OF PERFORMANCE BY THE INSTRUCTOR.

1. Administer the pretest.
2. Using the chalkboard, textbooks, information sheets, assignment sheets, and worksheets, explain the FCC Rules and Regulations for power output measurement, the procedures for using the CB-42, and terminology employed in such measurements.
3. Direct the students to complete the written exercise.
4. Evaluate the written exercise using the key from attachments.
5. Direct the students to perform application exercises in accordance with the established procedures.
6. In accordance with satisfactory student progress in the practice exercises, direct the student to perform a measurement for EVALUATION by the instructor.

OPTION 2 - GROUP-PACED AUDIOVISUAL INFORMATION LESSON FOLLOWED BY SELF-PACED PRACTICE AND PERFORMANCE.

1. Administer the pretest.
2. Using transparencies developed from the CB-42 flip charts, the chalkboard, testbooks, flip charts, and other reference materials, along with the CB-42 audio cassette tape and tape player, introduce the lesson. Explain what the students are to do.
3. Present the audiovisual program.
4. Administer the written exercise.
5. Evaluate the written exercise using the key from attachments.
6. After satisfactory grades on the written exercise, direct the students to begin their practice measurements. Note: Help from advanced students may be advantageous at this point.
7. After satisfactory student progress in the practice exercises, direct the student to perform a measurement for EVALUATION by the instructor.

OPTION 3 - COMPLETE SELF-PACED SELF-STUDY IN CLASS

1. Ascertain that each student has the necessary textbook, and references.
2. Inform students of study references and instruct them to enter those references in their student manual in the places provided.
3. Administer the pretest.
4. Direct students to begin the study of the material referred to in the references.
5. As each student completes the study, have the student complete the written exercise. Evaluate using the key.
6. Direct the study to perform a practice measurement under your supervision.
7. Further practice measurements may be made by the student if he so desires.
8. After satisfactory student progress in the practice exercises, direct the student to perform a measurement for EVALUATION by the instructor.

OPTION 4 - INDIVIDUAL AUDIOVISUAL SELF-PACED LESSON

1. Administer the pretest.
2. Ascertain availability of flip charts, audio casette tape, cassette player, instruction manuals, and information sheets.
3. Ascertain that the students know how to operate the cassette player.
4. Direct the students to begin studying the lesson by writing definitions of terms employed, followed by filling in the front panel layout sheet, and conculding with the written exercise.
5. After evaluation of the written exercise, have an advanced student assist the student in performance of a practice measurement. This may be followed by several practice measurements at the student's discretion.
6. After satisfactory student progress in the practice exercises, direct the student to perform a measurement for EVALUATION by the instructor.

OPTION 5 - OUTSIDE STUDY ASSIGNMENT, IN-CLASS WRITTEN EXERCISE, IN-CLASS PRACTICE AND PERFORMANCE

1. Administer the pretest.
2. Inform students of study references and instruct them to enter those references in their student manual in the places provided.
3. When the in-class phase begins, administer the written exercise. Evaluate, using the key in attachments.
4. Demonstrate the measurement in the classroom and invite questions.
5. Instruct the students to perform practice measurements.
6. After satisfactory student progress in the practice exercises, direct the student to perform for EVALUATION by the instructor.

ATTACHMENTS

The following attachments are included:

1. Pretest (which may also be useful as a posttest for prior lesson).
2. Written exercise.
3. Written exercise key and pretest key.
4. Instructor's evaluation guide.
5. Definitions worksheet.

Name_____

Date_____

Test: Principles of Amplitude Modulation
Pretest: Module EC-17C, Measuring the AM Power Output of a CB Transceiver per FCC Requirements

Directions: Answer the following multiple-choice FCC type questions by circling the letter of the correct answer. After completing the test, check your answers with the instructor.

1. A properly adjusted AM transmitter will have average plate current varying in the
   a. Class A modulator.
   b. Class C RF modulated stage.
   c. Grid modulated RF stage.
   d. Class B modulator stage.
   e. None of the above.
2. In radiotelephone, what is meant by the phrase "the process by which the amplitude of the carrier wave is varied in accordance with the speech or other signal to be transmitted"?
   a. Frequency modulation.
   b. Phase modulation.
   c. Amplitude modulation.
   d. Oscillation.
   e. Carrier shift.
3. Sideband frequencies resulting from amplitude modulation are
   a. audio frequencies.
   b. radio frequencies twice as great as the carrier frequency.
   c. radio frequencies one-half as great as the carrier frequency.
   d. radio frequencies equal to the sum of and to the difference between the carrier frequency and the modulating audio frequency.
   e. adjacent carrier frequencies.
4. A-3 emission is
   a. keyed continuous wave.
   b. modulated telegraphy.
   c. transmission of voice without sidebands.
   d. full carrier telephony with sidebands.
   e. facsimile.
5. The DC plate power input to the final stage of a transmitter can be determined by
   a. dividing the field strength at a distance of 1 mile by the antenna directivity.
   b. multiplying the voltage of the input signal by the plate current.
   c. multiplying the DC plate voltage by the DC plate current.
   d. multiplying the grid voltage by the cathode current.
   e. none of the above

Name_____

Date_____

EXERCISE EC-17C

1. A dummy antenna is used at
   a. FCC district offices only.
   b. the transmitter during adjustments which might otherwise cause interference.
   c. the transmitter during adjustments which require a load to be heavier-than-normal.
   d. the receiver to prevent unwanted reception and radiation.
   e. c and d.

2. Which of the following operations must be performed on CB transceivers by a holder of a second-class radiotelephone operator's license (or higher grade or license)?
   a. Measure DC input voltage.
   b. Measure antenna resistance.
   c. Measure SWR.
   d. Measure the DC input power to the final amplifier.
   e. None of the above.

3. In a CB transceiver a technician measures the following:
   Final RF amplifier collector voltage = 13.6 VDC; antenna resistance = 50 ohms; SWR = 1.8; final RF amplifier base current = 10-mA; transistora = .99. What is the DC input power to the final amplifier according to FCC Rules and Regulations?
   a. 13.6 Watts.
   b. 0.99 Amperes.
   c. 500 mW.
   d. 18.0 Watts.
   e. Cannot be determined from the above information.

4. The radio service in which private citizens may license radio transmitters for general personal or business communications is known as the
   a. Public Safety Radio Service.
   b. Private Commercial Radio Service.
   c. Citizens Radio Service.
   d. Amateur Radio Service.
   e. Utility Radio Service.

5. What is the typical efficiency of a plate-modulated Class C RF amplifier as used in a CB transceiver?
   a. 33.3%.
   b. 12.5%.
   c. 66.6%.
   d. 95%.
   e. None of the above.

INSTRUCTOR'S ANSWER KEY

FOR

PRETEST AND WRITTEN EXERCISE

PRETEST

1. d
2. c
3. d
4. d
5. c

WRITTEN EXERCISE

1. b
2. d
3. c
4. c
5. c

Name_____

Instructor's Evaluation Guide

for

MEASURING OUTPUT POWER

PERFORMANCE CRITIQUE:

Excellent . . . . . _____
Good . . . . . _____
Fair . . . . . _____
Needs Improvement . . . . . _____

		NO	YES
1.	Ascertained transceiver power supply voltage to be correct BEFORE connecting to transceiver.	_____	_____
2.	Properly adjusted CB-42 for power measurement.	_____	_____
3.	Properly connected cable between transceiver and CB-42 Analyzer.	_____	_____
4.	Placed microphone in test package before keying transmitter.	_____	_____
5.	Properly read output power on CB-42.	_____	_____
6.	Properly determined DC input power to final amplifier in CB transceiver.	_____	_____
7.	Indicated adequate knowledge with reference to locating final amplifier test points.	_____	_____

Name_____

DEFINITIONS WORKSHEET

Define the following terms:

1. RF Wattmeter

2. Input power

3. RF output power

4. Dummy load

5. Impedance matching

6. Unmodulated output power

7. Modulated output power

CHAPTER 7

GUIDE FOR DEVELOPING MODULES

This chapter contains a step-to-step procedural guide for developing individualized modules. It incorporates the procedures explained in the previous chapters into a basic performance guide or developmental model. The major steps and activities are represented in the model below and are further explained in the pages which follow it.

1--PLAN INSTRUCTIONAL REQUIREMENTS

- 1-1. Select task or competency
- 1-2. Develop or select performance objective
- 1-3. Develop or obtain criterion-referenced measure
- 1-4. Determine skills and knowledges
- 1-5. Develop or select enabling objectives

2--PLAN INSTRUCTIONAL STRATEGIES

- 2-1. Develop pretest/posttest for knowledges
- 2-2. Develop or obtain pretest/posttest for skills
- 2-3. Design practice activities
- 2-4. Prepare evaluation activities
- 2-5. Plan for learning experiences

3--PREPARE LEARNING ACTIVITY GUIDE

- 3-1. Write the introduction
- 3-2. Write the objective(s)
- 3-3. Write directions for pretests
- 3-4. List the required materials
- 3-5. Write directions for the information lesson
- 3-6. Write directions for application
- 3-7. Write directions for evaluation measure

4--PREPARE TEACHING GUIDE

- 4-1. Write the introduction
- 4-2. State the objective(s)
- 4-3. List the required materials
- 4-4. Write directions for administration

1--PLAN INSTRUCTIONAL REQUIREMENTS

The instructional requirements to be planned include the task or competencies, the performance objectives, the criterion-referenced measures, supporting skills and knowledges, and the enabling or sub-objectives.

1-1. SELECT TASK OR COMPETENCY

In order to have a performance-based, job-related module, the basic foundation should be a job task or competency. In other words, the module should be designed to develop proficiency required by the job. Here are some guidelines for selecting and stating the task or competency:

a. It should have a definite beginning and ending. The statement "Type business letters" has a beginning and ending, but the statement "Maintain correct margin" does not; it merely describes a work quality.
b. It can be observed, evaluated, or rated.
c. Completion results in a product, meaningful service or a solution or decision which can be documented.
d. It is made up of subordinate skills or procedures.

1-2. DEVELOP OR SELECT PERFORMANCE OBJECTIVE

The performance objective selected or developed should meet these criteria:

a. It is based on an occupational task or competency.
b. It specifies performance to be demonstrated or product to be developed.
c. It sets the standard for acceptable performance or product.
d. It specifies the conditions under which performance will occur or product will be developed.

1-3. DEVELOP OR OBTAIN CRITERION-REFERENCED MEASURE

The criterion-referenced measure will become the performance evaluation to assess students' overall success in the module. It will also be the basis for pretest of proficiency. Therefore, it should meet the following criteria:

a. It measures the same behavior as specified in the performance objective.
b. It applies the same conditions as specified in the performance objective.
c. It requires evaluation by the same standard as specified in the performance objectives.

1-4. DETERMINE SKILLS AND KNOWLEDGES

a. Break the task down into its elements and procedural steps.
b. Determine the supporting knowledges. They should meet one or more of these criteria:

(1) Present theory essential to performance
(2) Establish job orientation
(3) Explain job contingencies that are necessary for decision-making
(4) Prescribe necessary safety precautions
(5) Orient student to use for equipment and materials

1-5. DEVELOP OR SELECT ENABLING OBJECTIVES

Since individualized instruction is progressive, each module should contain some interim achievement steps or checkpoints. Such are usually referred to as the enabling objectives. Whether written as complete behavioral statements or as abbreviated action statements, enabling objectives should meet these criteria:

a. They should provide the structure for the specific activities within the module.
b. They should establish the major interim checkpoints within the module.
c. Each should represent a significant element of the task or a necessary increment of knowledges.
d. It should be made up of subordinate skills or knowledges.
e. It can be studied, practiced, and evaluated as a meaningful part of the module.

2--PLAN INSTRUCTIONAL STRATEGIES

2-1. DEVELOP PRETESTS/POSTTESTS FOR KNOWLEDGES

a. Pretests should be designed for one of these purposes:
(1) Measure students' readiness for module--knowledge of key facts, terms, prerequisites, etc.
(2) Measure students' prior knowledge of the information and thereby offer an opportunity to bypass part or all of the instruction. In this case pretests will be same as posttests.
b. Develop posttest if required. It will be required when pretest cannot be used as posttest. The posttest should measure all required knowledges.

2-2. DEVELOP OR OBTAIN PRETEST/POSTTEST FOR SKILLS

a. If necessary to assess supporting skills prior to entry, develop a pretest to measure such skills.
b. For proficiency advancement option, use the criterion-referenced measure or a version of it.

2-3. DESIGN PRACTICE ACTIVITIES

a. Write the exercises, situations, or projects which require application of what is to be learned in the information lesson.
b. Design the projects, performances, or situations to be required in the application portion of the module.

2-4. PREPARE EVALUATION ACTIVITIES

The situation, projects, problems, exercises, etc. must enable student to demonstrate achievement of the objective. Performance must be observable and measurable.

2-5. PLAN FOR LEARNING EXPERIENCES

a. Select the instructional media.
   (1) If possible, select optional media for transmitting the information.
   (2) The media selected should cover all required knowledges and skills.
b. Sequence the study and practice.
c. Describe the activities in a brief plan to include degree of individualization, media, student activities, and other elements as required.

3--PREPARE LEARNING ACTIVITY GUIDE

3-1. WRITE THE INTRODUCTION

This section should include the following as appropriate:
a. A transitional statement to link the module with previous instruction
b. An emphasis on the importance of the module
c. An overview of the content

3-2. WRITE THE OBJECTIVE(S)

a. The performance objective should communicate to the student:
   (1) What terminal performance is expected as a result of the module
   (2) The conditions under which it will occur
   (3) The standard by which it will be evaluated
b. The enabling objectives should reflect the major interim achievement of the module.

3-3. WRITE DIRECTIONS FOR PRETESTS

a. State the opportunity for taking the pretest and explain procedures.
b. State the opportunity for taking the proficiency advancement test and explain procedures.

3-4. LIST THE REQUIRED MATERIALS

If possible, list the materials in the order in which they will be used.

3-5. WRITE DIRECTIONS FOR THE INFORMATION LESSON

Directions should accomplish the following:

a. Explain the study options.
b. Give specific directions for study.
c. Explain the media options
d. Give specific directions for the information posttest.

3-6. WRITE DIRECTIONS FOR THE APPLICATION

Directions should include:

a. Detailed information on what to do.
b. A performance guide, if necessary.
c. Specific directions for the required demonstration or observation.

3-7. WRITE DIRECTIONS FOR EVALUATION MEASURE.

a. Give specific directions for what to do.
b. Provide specific information on what to use.
c. Include directions for what to do upon completion.

4--PREPARE TEACHING GUIDE

4-1. WRITE THE INTRODUCTION

This section should provide the teacher with a rationale for the module, a concise description, or both.

4-2. STATE THE OBJECTIVE

This should be the same as the objective in the learning activity guide.

4-3. LIST THE REQUIRED MATERIALS

This list should give complete directions for making the learning resources ready for the students.

4-4. WRITE THE DIRECTIONS FOR ADMINISTRATION

The directions should include complete guidance on administration of the module, including pre and posttest, options for teaching, and evaluation.

CHAPTER 8

EVALUATING MODULES FOR POSSIBLE USE OR ADAPTATION

To develop individualzied modules and the necessary instructional materials for all courses would be an impossible task. At best, any teacher--because of the time and work involved--can only hope to develop a few modules. But individualization can still be achieved by selecting, adapting, and using those modules and materials already available.

Modules and materials are available from many sources. Some of them are state departments of education, curriculum networks and organizations, and commercial publishers. But in deciding what to use, one should make an evaluation to determine if they meet specific course needs. This chapter, therefore, presents some evaluation guidelines. They are organized into two sections:

Evaluation of the Total Package
Evaluation of the Instructional Materials

EVALUATION OF THE TOTAL PACKAGE

In evaluating the total package, you should ask several questions about it.

IS THE PACKAGE ACTUALLY A MODULE, OR IS IT MERELY A COLLECTION OF MATERIALS?

Sometimes instructional materials are packaged according to units, tasks or topics, and called modules. Although the materials themselves might be excellent, the package might not be a complete individualized module.

REMEMBER: A module should include self-instructional directions for the student, include or make reference to required student materials and provide directions to the teacher. In order to use such a package of materials, it will be necessary to prepare a learning activity guide and a teaching guide to make complete individualized modules.

DOES THE OBJECTIVE AS STATED IN THE MODULE MEET COURSE REQUIREMENTS?

Before you can use or adapt any module or package, you should read the objectives. One of the most common discrepancies is that many modules teach ABOUT something instead of teaching to do it. Thus, if an objective calls for students to service spark plugs, you should expect that same objective in the module under consideration. A module whose objective is

only to identify spark plug conditions would not meet performance requirements unless there is a series of short modules covering the enabling objectives and leading up to task performance at the end.

DOES THE LEVEL OF THE MODULE MATCH THE LEVEL OF THE COURSE?

Obviously, modules--as well as any other materials--should be designed for specific student educational levels. Those designed for secondary students would not be appropriate for technical college students. Those designed for exploratory-type instruction at the junior high level would not be adequate for 12th grade students. Somewhere in the materials received--usually in a general introduction or attached description sheet--there should be a statement of the level of instruction. In catalogs of materials from publishers and curriculum organizations, the materials will either be categorized by levels or the level will be indicated in each description.

DOES THE MODULE HAVE THE MAIN FUNCTIONAL COMPONENTS?

Assuming that the module being evaluated meets the criteria in the above questions, you should next evaluate the learning activity guide and teacher guide for the major functional components.

LEARNING ACTIVITY GUIDE. In this text we have used these functional components:

Introduction
Objective(s)
Directions for Pretest
Materials/Equipment
Information Lesson
Application
Evaluation

This does not mean that these titles must appear in all modules. Writers use other terms to denote the components. For example, the introduction might be WHAT THIS MODULE IS ABOUT, the information lesson might be WHAT TO STUDY, and the application might be TIME FOR PRACTICE. What you should look for is a clearly-indicated, consistent sequence of directions. It might be helpful to ask these questions about the learning activity guide:

1. Does it tell the student in the beginning what the module is all about and why it is important?
2. Is each objective clearly stated so that the student will know in the beginning what is expected to be achieved?
3. Are there clear, concise directions for taking the pretest is one is included?
4. Is a complete listing of all resources provided?

5. Does it contain complete directions for what to study?
6. Are directions for practice included?
7. Are directions for the evaluation included?

TEACHER GUIDE. We have used these general functional components in the teaching guide:

Introduction
Objective
Material
Directions

Again, this does not mean that these exact titles must appear, but the functional components should be present. In evaluating the teaching guide, it will be helpful to ask these questions:

1. Does some type of introduction tell the teacher what the module is about?
2. Is each objective clearly stated?
3. Are the required materials listed for the benefit of the teacher?
4. Do the directions include use of pre and posttests, proficiency testing, and evaluation?

DOES THE MODULE APPROACH THE DESIRED DEGREE OF INDIVIDUALIZATION?

One of the decisions which should have been made prior to this point is what degree or degrees of individualization are expected of the instruction. Therefore, you should evaluate each module to determine those degrees it CAN achieve. Some of the important questions to ask are:

1. Is complete self-pacing possible?
2. Are there provisions for placement within the module according to students' prior knowledge and experience?
3. Have options been provided for the media to be used?

If the module does not meet expected degrees of individulization, then you must accept the degree it offers, reject it, or modify it to meet your requirements.

DO THE ACCOMPANYING INSTRUCTIONAL MEDIA COVER THE REQUIRED CONTENT?

In the planning for instruction, the necessary skills and knowledges for each task should have been specified. In order for a module to meet those content requirements, it must provide instructional media of some type designed to teach them. If it does not, there will be information gaps. If those gaps are large, the module will probably be unacceptable. If there are only minor gaps it might be possible to add some materials to bring it up to content requirements.

EVALUATION OF THE INSTRUCTIONAL MATERIALS

It is often necessary to make a further evaluation of the instructional materials, for even though the materials might meet requirements for content, there are some other factors to be considered. Some of the questions to be asked in evaluating the materials are as follows:

1. Are the materials technically accurate?
2. Has it been especially prepared for individual use?
3. Has it been prepared at the educational, reading, or vocabulary level of the students?
4. Is it sequenced according to course sequence requirements?
5. Does it include materials for practice and performance?
6. Are there any information gaps within each item of media?
7. Is the author a qualified authority or expert in the occupation?
8. Does the material appear to be more effective than what the course already has?
9. Are there any indications of sex role stereotyping?
10. Are narratives and visuals clear and appropriate to student levels?